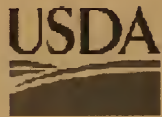


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United States
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Agriculture

Forest Service

Tongass
National
Forest
R10-MB-444a

April 2003



Cholmondeley Timber Sales

Record of Decision #1

Copy of R10-MB-444a



Abbreviations and Common Acronyms

AHMU	Aquatic Habitat Management Unit
ANILCA	Alaska National Interest Lands Conservation Act
ASQ	Allowable Sale Quantity
BMPs	Best Management Practices
CCF	Hundred Cubic Feet
CEQ	Council on Environmental Quality
DEIS	Draft Environmental Impact Statement
FEIS	Final Environmental Impact Statement
Forest Plan	Tongass Land and Resource Management Plan, 1997
GIS	Geographic Information System
IDT	Interdisciplinary Team
IRA	Inventoried Roadless Area
LTF	Log Transfer Facility
LUD	Land Use Designation
MBF	Thousand Board Feet
MIS	Management Indicator Species
MMBF	Million Board Feet
MMCF	Million Cubic Feet
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NIC	Non-interchangeable Component
OGR	Old-Growth Habitat Reserve
POG	Productive Old-Growth
RMO	Road Management Objective
ROS	Recreation Opportunity Spectrum
TES	Threatened Endangered Sensitive Species
TTRA	Tongass Timber Reform Act
VCU	Value Comparison Unit
VQO	Visual Quality Objective
WAA	Wildlife Analysis Area



United States
Department of
Agriculture

Forest
Service

Alaska Region
Tongass National Forest

648 Mission Street
Ketchikan, AK 99901
Phone: (907) 225-3101
Fax: (907) 228-6215

File Code: 1950

Date: April 23, 2003

Dear Reader:

Enclosed is your copy of the Record of Decision #1 (ROD) for the Cholmondeley Timber Sales, Craig Ranger District, Tongass National Forest. The ROD #1 documents my decision and rationale considered in reaching the decision. The effective date of implementation for the decision and Notice of Rights to Appeal are also specified in the ROD #1.

Analysis contained in the Cholmondeley Timber Sales Final Environmental Impact Statement (FEIS) was used for my decision. This ROD #1 only pertains to offerings in the Clover Bay and Sunny Cove areas. A ROD covering Sallery Cove will be issued at a later date.

Copies of the ROD #1 and FEIS have been mailed directly to those people who requested to be on the project mailing list. Copies of the ROD #1 and FEIS are available for review in all Forest Service offices (including District and Supervisor's Offices) on the Tongass National Forest. Additional copies may be obtained from the Craig Ranger District Office, 900 9th Street, Craig, Alaska 99921, or by calling (907) 826-3271.

I want to thank those of you who took time to review and submit comments on the Draft Environmental Impact Statement. I appreciate your interest in the management of the Tongass National Forest.

Sincerely,

THOMAS PUCHLERZ
Forest Supervisor



Cholmondeley Timber Sales

Record of Decision #1

**United States Department of Agriculture
Tongass National Forest
Ketchikan, Alaska**

Lead Agency

USDA Forest Service
Tongass National Forest

Responsible Official

Tom Puchlerz, Forest Supervisor
Tongass National Forest
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For Further Information Contact

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Cholmondeley Timber Sales (South and East Portions)

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Chomondely Timber Sales Area and East Formal

Sales Area		Formal	
1	1000	1	1000
2	1000	2	1000
3	1000	3	1000
4	1000	4	1000
5	1000	5	1000
6	1000	6	1000
7	1000	7	1000
8	1000	8	1000
9	1000	9	1000
10	1000	10	1000
11	1000	11	1000
12	1000	12	1000
13	1000	13	1000
14	1000	14	1000
15	1000	15	1000
16	1000	16	1000
17	1000	17	1000
18	1000	18	1000
19	1000	19	1000
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97	1000	97	1000
98	1000	98	1000
99	1000	99	1000
100	1000	100	1000

Record of Decision # 1

Cholmondeley Timber Sales (South and East Portions)

Introduction

This Record of Decision (ROD) documents my decision to select Alternative 5, with modifications, from the Cholmondeley Timber Sale Environmental Impact Statement (EIS). Analysis contained in the Cholmondeley Timber Sale FEIS is used for this decision. However, this ROD only pertains to offerings associated with the Clover Bay and Sunny Cove areas. A ROD covering the Saltery Cove offering area will be issued at a later date. This Decision includes the specific location and design of timber harvest units and roads, as well as protection requirements for harvesting timber and road building. The timber is intended to be sold in several sales of varying sizes. In addition, this Decision implements road management objectives such as maintenance and an access management plan. Whether or not to approve a non-significant Tongass Land and Resource Management Plan (Forest Plan) amendment adjusting the boundaries of several small old-growth reserves and one medium old-growth reserve (OGR) is also a part of this Decision.

Background

The purpose and need for this Project is to implement direction contained in the Forest Plan:

- Manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.

Record of Decision #1

- Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.
- Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.
- Support a wide range of natural resource employment opportunities within Southeast Alaska's communities.
- Maintain healthy forest ecosystems; maintain a mix of habitats at different spatial scales capable of supporting the full range of flora, fauna, and ecological processes native to Southeast Alaska.
- Maintain a forest-wide system of old-growth forest habitat to sustain old growth associated species and resources.

The alternatives and actions considered are possible approaches to meeting this purpose and need. The environmental analysis documented in the Final Environmental Impact Statement (EIS) for the Cholmondeley Project was conducted under the guidelines of the National Environmental Policy Act (NEPA) process. The NEPA was designed to help insure that I make the most informed decision possible for this proposed Project. The entire Cholmondeley Project is expected to provide approximately 37 million board feet (MMBF) of timber, under the guidance of the Forest Plan. The ROD covering Clover Bay offerings (North Monie and Dr. Point) and Sunny Cove offerings (Sunny and Cher) is expected to produce approximately 28.8 million board feet of timber (including right-of-way [ROW] volume).

Activities in the Cholmondeley Project Area take place on Timber Production and Modified Landscape Land Use Designations (LUDs). Other LUDs in the Project Area include two non-development LUDs: Old-Growth Habitat and Semi-remote Recreation. A comparison of the Forest Plan desired future condition for the Timber Production and Modified Landscape LUDs against the existing condition shows the opportunity to harvest suitable stands to meet Forest Plan objectives of providing saw timber and other wood products contributing to local and regional economies of Southeast Alaska.

Section 101 of the Tongass Timber Reform Act of 1990 (TTRA) directs the USDA Forest Service, "... to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." Section 101 of the TTRA specifies that Forest Service efforts to seek to meet market demand are subject to appropriations, National Forest Management Act requirements, and other applicable laws. Providing a timber supply from the Tongass for sustained local wood products industry employment and related economic and social benefits helps meet the Forest Plan objective of supporting a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

Regional mills have demonstrated the capacity to process the logs, if a supply of timber is available. There is a projected need for the timber from this Project Area (see Final EIS, Appendix A), to provide for stability within fluctuating market demand. A substantial component of the economy of Southeast Alaska is dependent on the timber industry.

Public Scoping

Public scoping began with publication of the Notice of Intent in the Federal Register on August 15, 1997. This ROD and the Final EIS disclose the environmental effects of the alternatives considered and document my decision to authorize the Cholmondeley Timber Sale Project and associated activities on the Clover Bay and Sunny Cove portions of the project area.

In developing the Final EIS and this ROD, I recognize that less than complete knowledge exists about many relationships and conditions of wildlife, fish, forests, jobs, and communities. The ecology, inventory, and management of a large forest area is a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction between resource supply, the economy, and communities is not an exact science.

The data and level of analysis used in the Final EIS were commensurate with the importance of the possible impacts (40 Code of Federal Regulations [CFR] 1502.15). When encountering a gap in information, the interdisciplinary (ID) team took one of two approaches: (1) they collected the missing information or conducted the analysis necessary to identify important relationships, or (2) they concluded that, although the missing information would have added precision to estimates or better specified a relationship, the basic data and central relationships are sufficiently established in the respective sciences so that new information would be very unlikely to reverse or nullify understood relationships. As such, information missing from the Final EIS was not determined to be essential for a reasoned choice among the alternatives.

Decision

This Record of Decision documents my decision to implement activities in the Sunny Cove and Clover Bay portions of the Cholmondeley Project Area. My decision encompasses the following:

- The estimated acreage to be treated at this time in this project area in multiple timber sales,
- The location and design of timber harvest units including reserve areas,
- The location and design of road systems and log transfer facilities (LTFs),
- Mitigation and monitoring requirements,
- Whether there may be a significant restriction on subsistence use and, if so, related findings and measures to minimize impacts on subsistence users,
- Approval of a non-significant Forest Plan amendment adjusting the boundaries of two small old-growth reserves and one medium old-growth reserve, and
- Access Management Plan objectives, including restrictions for resource protection.

I have decided to choose Alternative 5, as modified in this Record of Decision, as the Selected Alternative. I authorize the actions necessary to implement my decision.

Record of Decision #1

This decision meets the purpose and need for the project, is consistent with the Forest Plan, responds to issues raised during scoping, analysis, public responses to the Draft EIS, and subsistence comments.

Modifications:

- I am deferring my decision on the Saltery Cove watershed while we work with other agencies and residents toward resolving potential effects to drinking water systems.
- In response to visual concerns from Clover Bay, I am deleting a small portion along the northern edge of Unit 616-010 for scenery concerns. Adjustments will be made during layout of the unit.
- In response to concerns about logging slash and debris in the water, barges, rather than bag booms, will be used in the West Arm of Cholmondeley for helicopter log drops.
- I am choosing to modify two small Old-Growth Reserves and one medium Old-Growth Reserve based upon analysis completed within this EIS and within Appendix 1 of this Record of Decision. Modification of the Saltery small OGR will be determined at a future date in the Saltery ROD.
- To respond to concerns for a wide enough wildlife travel corridor, I have dropped the northern portion of Units 616-012 and 616-011 between the 2180000-2 road and Monie Lake in order to create a 600 foot buffer between the lake and the units.
- To respond to concerns expressed by local residents, other local users and to meet the intent of Section 404 for silvicultural exemption under the Clean Water Act, all roads that originate from Sunny Point LTF or Clover Bay LTF will be closed to all motorized traffic following salvage operations and silvicultural surveys. Salvage operations and silvicultural surveys will normally be completed within 5 years of timber harvest. Physical barriers will block the roads and a Code of Federal Regulation (CFR) closure order will prohibit access to these roads.
- In order to address concerns of access to subsistence resources, and to address safety concerns near residences, three measures will be taken. First, a contract clause will be applied with the approximate language as stated: "Purchaser's use of road no(s) 2170000-1, -2, -3, and 2170450 shown on the Sale Area Map and all temporary roads constructed within the Sunny Cove area are designated for administrative use only. Any motorized use of roads except that directly relates to Purchaser's harvest activities is prohibited. Signs shall be placed on roads with restricted use. This will be enforced during harvesting and road-building operations."

Secondly, a CFR limiting the discharge of firearms from any Forest Development Road will be enforced from time of construction into the future.

Thirdly, a forest closure order will be used to limit motorized use of roads, which are constructed from the Clover Bay LTF and the Sunny Cove LTF. Signing will occur at time of completion of logging operations. After salvage and silvicultural surveys, about 5 years, roads will be put in storage.

- NFS Road 2180000-1 is relocated to the east to avoid road impacts to the watershed supplying Clover Bay Lodge drinking water.

Due to the scattered and low volume per acre characteristics of the timber resource on the project area, economics drive this to be a one major entry proposal. With this proposal in mind, four units originally planned for uneven-aged management will be changed to an even-aged management system of clearcut with reserves. Uneven-aged management would have required a series of frequent entries which cannot be carried out under this one-entry proposal. The on-the-ground result of the change to even-aged management would be that the reserve trees left after this entry would remain standing and not removed in an intermediate treatment during this rotation. This would be a less impacting option. In essence, more trees would be left standing over time. These units or portions of units include 616-011, 616-017, 674-032, and 675-032.

Unit cards and road cards for the Selected Alternative, as modified by my decision, have been included as Appendices 2 and 3, respectively, of this Record of Decision.

Due to recent decisions and litigations, several changes in Forest Service direction occurred between the Draft EIS and the Final EIS:

- The Roadless Area Conservation Final Rule (Roadless Rule) was signed by the Secretary of Agriculture in January 2001. This rule generally establishes prohibitions on road construction, road reconstruction, and timber harvest in Inventoried Roadless Areas on National Forest System lands. In 2001, the Secretary of Agriculture began a review of the roadless area rule. This review has led the agency to initiate Interim Directives with the intent that the values associated with inventoried roadless areas are fully considered within the context of forest planning before any project decisions are made that would build roads or harvest timber in roadless areas. This project has been prepared to fully comply with these Interim Directives. **The Cholmondeley Draft EIS meets the exemption criteria included in the Roadless Area Conservation Rule. This project could move forward regardless of the Roadless Area Conservation Rule status.**
- In *AFA v. USDA* (J99-0013 CV (JKS)), the US District Court, District of Alaska vacated the 1999 Record of Decision for the Tongass Forest Plan and upheld the 1997 Record of Decision. The Cholmondeley project is consistent with the 1997 Record of Decision for the Tongass Land and Resource Management Plan, as displayed throughout the EIS.

Description of Selected Alternative:

1. The Selected Alternative for the Clover Bay and Sunny Cove portions of the Cholmondeley project area will harvest about 1,225 acres of commercial forest land (CFL) to meet the requirements of the Tongass National Forest timber sale program. This specified harvest will provide approximately 27 MMBF of sawlog and utility volume (not including right-of-way [ROW] volume [1.8 MMBF]). Design features of approved harvest units are described in detail on the unit cards in Appendix 2 of this ROD.
2. The Selected Alternative includes the following silvicultural systems: even-aged, and two-aged harvest. This is consistent with Forest Service Chief's policy to reduce the amount of clearcutting. These harvest systems, with reserves, are intended to provide stand structural diversity, maintain riparian habitat, and

maintain scenic quality. Uneven-aged treatments were changed to better meet definitions for a one-entry proposal. In addition, these prescriptions meet the intent of the Forest Plan for the American Marten Standards and Guidelines. The impacts to residual trees will be minimized through routine sale layout and sales administration. The unit cards in Appendix 2 of the ROD provide specific direction for field layout to accomplish these objectives.

3. The Selected Alternative includes construction of about 21.1 miles of new road and two LTFs in order to access the specified timber harvest units. Appendix 3 of the ROD contains the road cards, with direction for locating each road. The road cards list road segments and identify road management and access objectives for future management of the transportation system, including maintenance and closures. The management and objectives were developed through a project specific roads analysis process. This ROD identifies mitigation measures that reduce or eliminate adverse environmental effects of the timber harvest and road construction activities specified in the Selected Alternative.
4. The Selected Alternative implements the Access Management Plan identified in the Final EIS (Chapter 3, Transportation section). A CFR closure order will prohibit motorized vehicle access on all roads originating from Clover Bay and Sunny Cove. A contract C-Provision will be applied during harvest operations to limit road use to administrative purposes only in the Sunny Bay Area.
5. Stream buffers will meet or exceed requirements specified by the Forest Plan process group (Forest Plan, pages 4-53 to 4-73) standards and guidelines.
6. The Selected Alternative includes a non-significant Forest Plan amendment to adjust the boundaries of two small old-growth habitat reserves in Value Comparison Units (VCUs) 616, and 675. It also modifies one medium old-growth reserve in VCUs 616, 617 and 676. See Appendix 1 for more details. These adjustments address many of the concerns raised in public comment. Figure A1-1 identifies the original Forest Plan and amended reserve locations.
7. The selected alternative includes a monitoring plan with feedback mechanism to provide a reasonable assurance that BMPs and standards and guides are being met for state water quality standards.
8. Additional mitigation to address water quality issues in domestic water watersheds include:
 - Increasing buffer widths on streams,
 - Implementing several two-aged management prescriptions,
 - Conducting petroleum storage and maintenance activities outside of the drinking water watershed,
 - Timing road construction to avoid extremely wet periods,
 - Developing a site-specific erosion control plan for each stream tributary to drinking water use,
 - Prohibiting motor vehicle access following salvage operations and silvicultural surveys,

- Storing roads (removing drainage structures) following salvage operations and silvicultural surveys,
- Using log stringer bridges in lieu of culverts to avoid instream work on the drinking water streams,
- Placing hay bales and other sediment traps in ditch lines, and
- Developing rockpits outside of drinking water watersheds.

See Items Common to All Alternatives in Chapter 2 and Appendix C, Mitigation Measures, in the Final EIS. Stream crossing designs are displayed in Figures A4-2 and A4-3 of Appendix 4 of the ROD

9. During other agency permitting processes for these sales, the Forest Service will recommend that the agencies allow neither direct water drops by helicopter nor logging camp facilities within Sunny Cove. This addresses the issues of shallow water and potential effects on the mariculture operations in the cove.
10. The Forest Service will also recommend that permitting agencies for these sales not allow helicopter water drops in Clover Bay between June 1 and August 15 if the Clover Bay Lodge is present. This addresses possible visual and noise conflicts for the lodge.
11. Final engineering and fisheries surveys will be used as a standard practice to address crossing needs during the layout phase of sale preparation for NFS Road 2180000-1. If these surveys determine that fish timing is not required for the first mile of road, then road construction would not be allowed within 2,500 feet of the permitted Clover Bay Lodge site, from June 1 to August 15, if the lodge is present. Other activities prohibited during this time, if the lodge is present, include LTF construction and yarding activities in Units 617-009 or 616-010.
12. All alternatives, including the Selected, have varying levels of environmental effects depending upon the emphasis of the alternative. The effects of implementing the Selected Alternative fall within the range of analysis done on the alternatives in the FEIS. Implementation of Alternative 2 would cause the least adverse environmental effects of the action alternatives as it proposes 100 percent helicopter yarding with no road building. This alternative, in its entirety, is not economically feasible. Without some mechanism to decrease the costs associated with long helicopter yarding distances, the majority of the units fall into the highest cost/MBF helicopter costing comparison category. Alternative 7 emphasizes the best biological mix of reserves as preferred by the interagency team of biologists. This alternative has the lowest amount of volume and the highest stumpage values. However, it takes a large area of the more viable ground out of production and would fail to meet the Forest Plan objectives of providing a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle. Alternatives 3 and 6 propose more helicopter yarding than Alternatives 4 and 5; however, as with Alternative 2, these alternatives are not economically feasible. Alternatives 4 and 5 have similar environmental effects. Alternative 5, while not the environmentally preferable alternative, was selected because it best meets the purpose and need for the project, is consistent with the Forest Plan, and responds to issues raised during scoping and analysis.

Record of Decision #1

Table R-1: Prescription Summary by Unit

Silvicultural Systems			Even-aged CC w/ Reserves	Two-aged	**Steep Acres Dropped	Totals
	FEIS	Logging	ROD	ROD	ROD	ROD
Unit #	Acres	System	Acres	Acres	Acres	Acres
615-025	39	HE	39		2	37
616-007	33	RS	16	17	2	31
616-008	36	RS,SH	30	6		36
616-010	22	HE	22			22
616-011	78	RS,HE,SL	78		3	75
616-012	58	RS		58		58
616-013	69	SH,LS,SL	65	4	2	67
616-016	36	RS	36		3	33
616-017	24	SH,RS	24			24
616-018	30	RS,SH	30			30
616-019	17	RS,HE	17			17
616-021	41	SL,HE,RS	41			41
616-022	38	LS,SL,RS	38			38
616-023	23	RS,LS,SL	23		2	21
616-024	55	SH,LS,RS	18	37	3	52
616-123	30	LS,RS	30			30
616-275	71	SL,HE	71			71
617-009	15	HE	15			15
674-032	9	HE	9			9

RS=Running Skyline

SL=Slackline

SH=Shovel

LS=Live Skyline

HE=Helicopter

* Pre-sale crews will assure 100 acre maximum.

** Unvisited acres designated as unsuitable due to >72% slopes (ref. Table 3-41 in FEIS)

Table R-1: Prescription Summary by Unit (continued)

Silvicultural Systems			Even-aged CC w/ Reserves	Two-aged	**Steep Acres Dropped	Totals
		Logging	ROD	ROD	ROD	ROD
Unit #	Acres	System	Acres	Acres	Acres	Acres
674-537	44	HE	44			44
674-548	14	HE	14			14
674-549	28	HE	28		2	26
674-550	26	HE	26		4	22
674-551	34	HE	34		3	31
674-583	26	HE	26			26
675-028	16	RS	16			16
675-029	13	RS	13			13
675-030	67	RS,SL	67			67
675-031	3	HE	3			3
675-032	42	HE	42			42
675-033	105	SL,H,RS	105			100*
675-037	43	HE	43			43
676-462	14	HE	14			14
676-472	5	HE	5			5
676-484	6	HE	6			6
676-489	17	HE	17		2	15
676-500	9	HE	9			9
676-592	9	HE	9			9
TOTAL	1245		1123	122	28	1212***

RS=Running Skyline

SL=Slackline

SH=Shovel

LS=Live Skyline

HE=Helicopter

* Pre-sale crews will assure 100 acre maximum.

** Unvisited acres designated as unsuitable due to >72% slopes (ref. Table 3-41 in FEIS)

*** The total is five acres less because Unit 675-033 will be reduced to 100 acres during sale layout.

Reasons for Decision

1. In making my decision, I worked to assure consideration of all issues and to take into account the competing interests and values of the public. There were many divergent public, personal, and professional opinions expressed during this EIS process. I have also considered in-depth the many concerns of the community and the floating lodge that operate within or use the project area. The decision will probably not completely satisfy any one particular group or individual. However, I considered all views, and I believe the decision I have made is reasonable. The Selected Alternative provides a beneficial mix of resources for the public when viewed in the context of the entire forest. It is within a framework of existing laws, regulations, policies, public needs and desires, and capabilities of the land, and meets the stated purpose and need for this project.
2. My decision to implement this Selected Alternative conforms to the Forest Plan and sound National Forest management. I have considered the need to help provide a sustained level of timber supply to meet annual and Forest Plan planning cycle market demand, and to provide diverse opportunities for natural resource employment, consistent with multiple use and sustained yield of all renewable forest resources. Timber sales implemented through this Project will help meet Southeast Alaska timber supply needs.
3. In the Selected Alternative, I have amended the Forest Plan by adjusting the boundaries of the small old-growth habitat reserve in VCU 675 so that it abuts the medium old-growth reserve in VCUs 617 and 676, and by adjusting the boundaries and locations of the small old-growth habitat reserve in VCU 616. I have also adjusted the OGR in VCU 616 to allow for a larger corridor (600 feet) on the south side of Monie Lake by deleting the northern portions of Units 616-011 and -012. My decision more adequately addresses concerns about the distribution and connectivity of deer winter range. The new boundary locations encompass, for the most part, the best non-fragmented habitat remaining in the VCUs while still allowing for a viable timber sale offering. Relocating these small old-growth habitat reserve boundaries results in a reduction in the lands suitable for development by 3,643 acres above the minimums required for these VCUs according to the Forest Plan. Relocating the medium old-growth habitat reserve boundaries in order to meet the minimum acres for the high volume productive old-growth required results in a reduction in the lands suitable for development by 3,552 acres above the total acre minimums required for these VCUs according to the Forest Plan. Additional information is contained in Appendix 1 of the ROD and in the old-growth section of Chapter 3.

In making this decision, I considered the recommendations of the Interagency team of biologists as well as the alternatives presented by the IDT. I chose an alternative, which responds in part to the opportunities identified by the interagency wildlife biologists without significantly further reducing the lands available for timber production from those specified in the Forest Plan (see the OGR discussion in Chapter 3 of the FEIS).

4. This ROD authorizes the removal of approximately 27.0 MMBF (not including right-of-way [ROW] volume [1.8 MMBF]) of the 35.6 MMBF harvest analyzed in Alternative 5 in the FEIS. This volume would contribute to meeting market demand for timber and provide opportunity for sales of different sizes. Removal of the remaining 8.6 MMBF will be considered as part of the Saltery Cove decision.
5. The Selected Alternative will provide the highest economic return to the Federal government while meeting the previously mentioned resource objectives. The actual value of timber sold will be determined during the timber sale appraisal process and will depend on the market conditions at that time. See Chapter 3, Issue 4 in the Final EIS and appendix H for more information.
6. The Selected Alternative meets or exceeds the visual quality objectives (VQOs) as specified from the priority travel routes and key viewsheds. Actual viewpoints used in the analysis for meeting the VQOs for each viewshed, are found in Chapter 3 of the Final EIS under the Scenery subheading in Issues 1, 2, and 3, and in the Scenery section. The viewpoints can also be found in the planning record.
7. The Selected Alternative implements an Access Management Plan that resulted from an analysis of community needs, resource concerns, and potential impacts, which were identified through internal, interagency, and public input. As a result of public comment, all roads will be closed by physical barrier following salvage operations and silvicultural surveys. A CFR closure order will be used to prohibit motorized vehicle use on NFS Roads 2170000-1 and 2180000-1. The Transportation section in Chapter 3 of the Final EIS and the road cards in Appendix 3 of the ROD and the Cholmondeley Project Area Roads Analysis Determination of the project file contain specific information on the Access Management Plan.
8. A General Prohibition, 36 CFR 261.10 (Occupancy and Use) prohibits the discharging of firearms within 150 yards of a residence or across or on a Forest Development Road whereby any person or property is exposed to injury or damage as a result of the discharge. This prohibition provides further protection under all alternatives, during road construction, harvesting and after road storage.
9. My decision implements many precautions, safeguards, practices, and feedback mechanisms, as mentioned above, to ensure that water quality standards will be met, within a reasonable risk. See the Domestic Water subsections in Issues 1, 2, and 3 in Chapter 3 of the Final EIS, compliance monitoring plan in Chapter 2, erosion control monitoring plan in Appendix G, and Appendix B, Response to Comments, for a more in-depth explanation.
10. The Island Point LTF was analyzed between Draft EIS and Final EIS. Although it was considered a viable option, Clover Bay LTF was chosen for several reasons. Clover Bay offered better raft/barge storage protection in the area. It provided a less constricted entrance for docking. Clover Bay provided less exposure to wind and waves. The Clover Bay LTF was also much less expensive, costing over \$700,000 less than the Island Point LTF. The Clover Bay site requires less road construction, thus reducing the number of stream crossings and impacts to wetlands and other resources.
11. The Clover Bay LTF also offers greater future recreational opportunities compared to the Island Point LTF by providing access to a series of small lakes via foot travel.

12. The Selected Alternative implements the Forest Plan American marten Standards and Guidelines. Using appropriate silvicultural prescriptions, the Selected Alternative ensures that all harvest units containing high value marten habitat, retain stand structure distributed in those areas.
13. Logs transported by helicopter to the saltwater of West Arm Cholmondeley will be flown to barges in lieu of bag booms.
14. I find no concrete evidence for the claim that harvest activity near Clover Bay will permanently ruin the financial success of the Clover Bay Lodge. The Selected Alternative, with its combination of standards and guides, BMPs, mitigation measures, and adjustments to units, would have limited impacts on the recreation businesses in the project area. An informal survey of nine lodges in Southeast Alaska concluded that past harvesting in fishing lodge viewsheds, in the opinion of the lodge owners, has had no financial impact on their lodges. (See the Socio-economic Report in the planning record.) Conversely, the number of potential recreation opportunities that lodge owners could capitalize upon should increase following project implementation. The increased access to forest resources along the closed road system could provide numerous opportunities such as hiking, mountain biking, or fresh water fishing. The land use designations for the lands immediately to the west and north of Clover Bay have been changed, as part of this decision, to non-development with the exception of a small corridor at the LTF site. Additionally, this lodge is a mobile facility on a barge and can be moved to a new location if the owners should choose to do so. According to the Forest Plan, LTF development is allowed in the 1000-foot beach buffer.
15. I have chosen to delay my decision for a selected alternative in the Sallery Cove area while we continue to work with other agencies and landowners to mitigate drinking water concerns. I do intend to issue a ROD in the future for the Sallery area, which will address timber harvest, roads and modification of the old-growth reserve in VCU 614. The Sallery ROD will be based on the Cholmondeley FEIS with possible supplemental information that pertains only to the Sallery portion of the Cholmondeley Project.
16. I have carefully considered the timing of this decision in view of ongoing changes in agency regulations and pending litigation. While I appreciate and understand the comments advising to delay this decision until greater certainty exists regarding roadless area management, consideration of wilderness values, and other current events, the need to complete analyses in a timely manner is compelling. Some of the factors I considered in making this decision are listed below.
 - The Forest Plan allows the activities approved by this decision to take place.
 - The repercussions of delaying decisions regarding road building and timber harvest, even for a relatively short period, have a significant effect on the amount of timber available for sale next year, due to the time needed for sale preparation activities, appraisal and advertisement, and to provide for the winter period when sale units are typically inaccessible.
 - Decisions delayed affect other decisions “in-line” for consideration, creating impacts to the entire sale program several years into the future.

- The Tongass National Forest will continue to be managed in compliance with Section 101 of the Tongass Timber Reform Act of 1990 (TTRA) which states in part that the Secretary of Agriculture "...shall, to the extent consistent with providing for the multiple use sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the demand from such forest for each Planning Cycle." (Forest Plan ROD, page 37).
- The Selected Alternative includes little effect to the inventoried roadless acres. In the project area, over 95 percent of the McKenzie Roadless Area remains unaffected and over 91 percent of the productive old growth will remain after harvest operations. The Selected Alternative proposes approximately 1,225 acres of harvest and 21.5 miles of road, all of which will be put in storage upon completion of the timber sale, salvage and silviculture surveys.
- Residents of Sunny Cove have both raised the issues of protection against stray hunter bullets and the additional hunting pressure for subsistence resources in the immediate area around their homes. As mentioned earlier, a combination of mitigation measures will address these concerns. Road closures will limit access and reduce hunting pressure in the future. Prohibiting the discharge of firearms from roads and limiting road use by the purchaser for administrative use only during operations will lower the safety risk and hunting pressure for the present time. Clover Bay Lodge has only been present during a small portion of the hunting season and has not raised safety or hunting pressure as a concern.

How Issues Are Addressed

In the following summary, I show how significant issues are addressed within the Selected Alternative. Significant issues for the Cholmondeley Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and alternatives. Three additional concerns were considered but determined not to be significant for the project decisions to be made; they are either already resolved in the Forest Plan, or their resolution falls outside the scope of the Cholmondeley Project.

The Cholmondeley Project and watershed analyses implement the recommendations applicable to project-level planning presented in the Forest Plan. Site-specific BMPs were selected to minimize the potential for impacts to fish habitat. These BMPs are identified on the individual unit design and road cards in ROD Appendices 2 and 3. The Forest Plan Riparian Management Area (RMA) buffers are implemented on all Class I, II, and III streams in the project area.

The majority of very high mass-movement index (MMI-4) soils have been removed from the timber base following office or field examination by a professional soil scientist. Remaining harvest units with instability indicators were field reviewed. In a few cases, the ID soil scientist identified slopes greater than 72 percent that are suitable for timber harvest due to lower than MMI 4 landslide potential. Most sites

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retained in the unit pool are small inclusions of short pitches adjacent to cliffs or rock outcrops. See Table 3-41 of the FEIS for the list of unvisited inclusions that will be dropped from the suitable timber base.

Issue 1: Effects to Saltery Cove

Issue 1 will be described in a future ROD covering the Saltery Cove area.

Issue 2: Effects to Clover Bay

The Clover Bay Lodge is a floating lodge that moors seasonally in Clover Bay. The owners of the lodge are concerned about the effects of timber harvest and associated activities on the scenic quality of the bay, disturbance of their clients' experience, and domestic water supply.

Scenery

Under the selected alternative, the northern boundary of Unit 616-010 will be moved downslope to minimize visibility from the bay. Units 616-022, 616-023, and 616-123 are all visible from Clarence Strait to some extent. The wide stream buffers and number of reserve trees would temper the visual effects of timber harvest. The visual effects of timber harvest would be well within the VQO standards of the middle and foreground. Clover Bay Lodge clients would see and hear logging activity during the two to four seasons of harvest operations. The scenery would be modified as seen from Clarence Strait.

The land use designations for the lands immediately surrounding Clover Bay have been changed, in this decision, to non-development, with the exception of a small corridor at the LTF site. Modifications to the Old-growth Reserve system through the non-significant Forest Plan amendment that is part of this decision ensures that development within is limited to the small corridor that includes the LTF.

Changes to the landscape, as seen from Clover Bay, would be slight except for the LTF, which would alter the recreation setting. Upland facilities will be somewhat screened by vegetation. The style of LTF with fewest visual impacts was chosen (low angle ramp). It is anticipated that barges will be used in lieu of log rafts due to the exposure, salt water effects on logs and tight spaces. During unit layout, if no additional instream fish timing is required near Clover Bay, we would implement a mitigation measure that would limit activities near Clover Bay between June 1 and August 15.

Lodge Business

Information provided by the lodge owners alleges a high risk of losing recreation industry jobs (Social Economic Report, project file). Analysis of effects of harvesting in lodge viewsheds, based on surveys of other lodges located in harvested areas, resulted in no perceived impacts of harvest to the lodge businesses. Changes in the clientele marketing or moving the lodge to a more amenable LUD may be the options available.

Access to the harvest units north of Clover Bay requires constructing 13.5 miles of classified road. Road connections to proposed LTFs near Sunny Cove, Trollers Cove, and Island Point were considered; however, due to the amount of new road construction, we determined that a road connection would have many resource impacts and would be economically infeasible.

A special CFR road closure (36 CFR 261.54) order in the Clover Bay area would prohibit motorized vehicle traffic after timber harvest for use other than administrative

purposes. After completion of silvicultural examination and salvage opportunities, the roads would be placed in storage. There may be an increase in hiking use of the forest roads.

Domestic Water

The road planned through the drinking water watershed in Clover Bay was realigned to the east of the watershed where it has no impacts to the drinking water.

Wind

Wind effects from logging activity is expected to be minor in Clover Bay.

Approximately 1,700 feet of timber made up of beach buffer and unmerchantable timber exists between the two closest units (616-010 and 617-009) and the bay.

Shorter trees near the shoreline and lower volume units have less chance of windthrow occurring.

Alternatives included analysis of amount of time for road construction, length of logging seasons, number of seasons, support equipment presence, and logging systems and silvicultural systems. The selected alternative would have the most number of seasons of effects compared to helicopter logging scenarios.

Issue 2 Highlights of the Selected Alternative

- Meets all VQOs for Clover Bay viewsheds.
- Prescribes increased tree retention to limit visual effects through various silvicultural systems.

Issue 3: Effects to Sunny Cove

The residents of Sunny Cove are concerned about the potential impacts of timber harvest on: domestic water supply, scenic quality, changes of wind patterns, and mooring and property safety. They are also concerned that increased road access would increase competition for subsistence resources.

Domestic Water

Water quality in the domestic watershed was addressed in several ways in the Sunny Cove area. Stream buffers exceed the minimum requirements of the Forest Plan; no-harvest buffer widths are increased along streams in the domestic watershed. State and Federal agreed-upon BMPs and additional mitigation measures will be required during road construction and log haul to limit sediment production in the domestic water streams. See the Domestic Water subsection in Issue 3 in Chapter 3 of the Final EIS, compliance monitoring plan in Chapter 2, erosion control monitoring plan in Appendix G, and Appendix B, Response to Comments, for a more in-depth explanation. A BMP monitoring plan with a feedback mechanism will provide a reasonable assurance that state water quality standards will be met. Road closures will decrease future sediment production. All domestic water stream crossings have changed from culverts to log stringer bridges to reduce instream activity. The percent of harvest of the domestic watershed is well below any thresholds for impacts on streamflow.

Mariculture

Impacts to mariculture operations will be mitigated by not allowing road construction south of Sunny Creek, implementing the measures listed above for water quality in the domestic watershed, and recommending that other permitting agencies not allow helicopter drops or floating camps within Sunny Cove.

Scenery

The small unit size and number of reserve trees left in the harvest units would decrease the visual effects of timber harvest as seen from homes in Sunny Cove. Residents would see and hear logging activity during the three to four seasons of operations.

Privacy/Security

A CFR road closure order would close all Sunny Cove roads to motorized vehicles after road-building, timber harvest, post-harvest activities, and potential salvage operations. Once silvicultural activities are complete, the roads would be placed in storage. Discharge of firearms from the Sunny Cove roads or any Forest Development Road is prohibited at any time. A contract c-clause will also be requested to limit motorized use of all Sunny Cove roads to administrative use and use directly related to the Purchaser's harvest activities. Hiking use may increase on the forest road but since the road is located more than ¼ mile from private homes, minimal changes in the security of the area are expected. Access to the harvest units north of Sunny Cove requires the construction of 4.6 miles of classified road and one LTF (Figure 2-5). Road connections to the existing LTF at Polk Inlet and to the proposed LTF at Clover Bay were considered. However, these road connections were economically infeasible and would have greater resource impacts because of the amount of new construction involved.

Subsistence

Effects to animal and plant populations used for subsistence is minimized through numerous mitigation measures, standard practices and Forest Plan Standards and Guides. Components of the old-growth conservation strategy in the Forest Plan set aside many types of reserves outside of units while reserve trees will also remain inside most harvest units. Mitigation measures include closing roads after salvage and silvicultural surveys and limiting road use by the contractor for administrative use only during timber harvest and road-building operations.

Wind

Harvesting Units 675-032, 674-032, and 675-031 may influence wind patterns in the cove. The small unit size and number of trees left standing on the units should break wind speed. Beach buffers of 1,000 feet should protect anchorages and facilities in Sunny Cove. No changes to the safety of the anchorage should occur (Silviculture and Timber Resource Report, project file).

Issue 3 Highlights of the Selected Alternative

- Meets all VQOs for Sunny Cove viewsheds.
- Monitoring plan, erosion control plan, BMPs, and mitigation measures will be used to provide a reasonable assurance that state water quality standards will be met.
- Road closure after construction and the general prohibition (CFR 261.10) on firearms discharge from roads will provide reasonable security measures. Use of roads for only administration or harvest or road-building activities will limit access to subsistence resources.

Issue 4: Timber Sale Economics and Supply

Concerns were expressed about the economic viability of timber sales. More complex unit prescriptions on difficult terrain may affect the amount of timber available to meet Southeast Alaska market demands. Of additional concern is the effect timber harvest would have on local employment and revenues. Data described below is for the entire project area including all offerings.

As directed by this ROD, the Selected Alternative of the Cholmondeley Project Area would produce an estimated 27 MMBF of timber (28.8 MMBF including right-of-way).

Offered volume would be divided into five sales with an average volume of 5.8 MMBF. This volume includes incidental right-of-way volume and translates into approximately 188 timber jobs.

Running the NEAT (NEPA Economic Analysis Tool) program, for Alternative 5 the expected bid value of this timber, in today's market, with 6 inch utility standards and domestic processing is -\$3,442,146 with a stumpage value of -\$46/CCF. Running the NEAT program for Alternative 3 resulted in an expected bid value of -\$6,093,178 and stumpage value of -\$91. An optional run for Alternative 5 with 10 inch utility standards and with cedar exported resulted in an anticipated bid value of \$1,683,322 with a stumpage value of \$27/CCF.

In weighing the relative merits of the alternatives related to this issue, I am aware that all of the comparisons are estimates and actual revenues, employment, and costs can vary widely in different market conditions. Even with this variability, however, I believe the comparisons made in the Final EIS provide a useful and meaningful way to compare alternatives to one another.

Issue 4 Highlights of the Selected Alternative

- Does the best job of balancing Forest Plan resource protection measures and timber supply, while still providing an economically viable timber sale under certain utility standards.
- Produces sufficient volume for meeting established market demand (28.8 MMBF).
- Supports a large amount of logging jobs while generating income in the timber industry.
- Produces a positive net stumpage under certain processing conditions.

Issue 5: Roadless Character

The entire project area (52,772 acres of land) is located within the McKenzie Roadless Area (80,650 acres), and is largely undeveloped. Concerns were expressed that timber harvest and road construction would change the undeveloped character of the roadless area. Proposed development could affect access patterns and future management.

Following timber harvest under the selected alternative, 18,074 acres of the project area would remain classified as Primitive and 16,809 acres would classify as Semi-Primitive, Non-Motorized. Therefore, the majority of the project area maintains a natural, undeveloped character. The area without roads or timber harvest within the McKenzie Roadless Area would be reduced by approximately 10 percent. Changes in the scenic values and opportunities for solitude are described under Issues 1, 2, and 3, above. Effects on Wilderness eligibility and other resource values are discussed in Chapter 3.

The largest remaining roadless area is an unbroken parcel of land between Spiral Cove and Kluanil Cove. It includes the rugged terrain and lake basins in the center of the project area and the coastal area on the northern side of Cholmondeley Sound entrance. New access points to lakes and inland points of interest would be available at Clover Bay and Sunny Cove. The road north of Sunny Cove would provide a convenient trail through the Drinking Water Watershed and lower part of the Sunny Creek Watershed (Recreation, Roadless Areas, Wild and Scenic Rivers, and Wilderness Report, project file). Temporary active disturbance from the logging operations would last between three to five years. Concentrating harvest in three distinct areas has lessened the impact to the roadless character.

Issue 5 Highlights of the Selected Alternative

- Over 72% of the McKenzie Roadless Area remains intact. The IRA still meets eligibility requirements for Wilderness.
- Majority of the project area remains in a natural, undeveloped character according to the Recreation Opportunity Spectrum (ROS).
- 91% of the existing productive old growth will remain.

Public Involvement

Scoping

The Council on Environmental Quality (CEQ) defines scoping as "...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). The scoping process invites public participation and incorporates public comment in the decision-making process. Through scoping, the Forest Service identifies public issues and develops alternatives to the proposed action that respond to those issues. The scoping process begins early in the analysis and continues until a decision is made. In addition to the following public involvement, the Cholmondeley Project has been listed on the Tongass National Forest Schedule of Proposed Actions and included in the Tongass National Forest 10-Year Timber Sale Action Plan for several years. Both are available on the Internet.

The public has been invited to participate in the project in the following ways:

Notice of Intent (NOI)

A Notice of Intent was published in the *Federal Register* on August 15, 1997, when it was decided that an EIS was to be undertaken for the project.

Public Mailing

In August 1997, a letter providing information and seeking public comment was mailed to approximately 375 individuals and groups that had previously shown interest in Forest Service projects in Southeast Alaska. This included federal and state agencies, Alaska Native governments and groups, municipal offices, businesses, interest groups, and individuals. A total of 42 responses to this mailing were received, and issues were identified for this project.

Local News Media

Announcements about the project were printed in the *Ketchikan Daily News* and *Island News* for Prince of Wales.

Public Meetings

Public meetings were held with Saltery Cove, Sunny Cove, Clover Bay, and Kasaan residents in 1997, 1999, 2000, and 2002. Other meetings with residents were held in Saltery Cove and Ketchikan. The Forest Service provided project area information, presented the proposed action, and discussed local concerns, interests, and subsistence uses. The communities' issues were incorporated in the Cholmondeley analysis, and Alternative 3 was developed to address their concerns.

Meetings with Agencies, Native Groups and Others

Other government agencies – including U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and the Department of Environmental Conservation – attended several ID team meetings. Information discussed at these meetings was used to produce old-growth reserve options and develop alternatives. Consultation with National Marine Fisheries Service was accomplished through the Essential Fish Habitat analysis process. Other agencies were contacted for technical expertise in water quality and wildlife/fisheries regulations, and logging capabilities. The community of Kasaan was consulted on its use of the project area.

Availability of the Draft EIS for Public Comment

Availability of the Draft EIS was announced in the Federal Register on December 29, 2000 and through notices in local papers. The original deadline for public comment was February 19, 2001. A notice in the January 12, 2001 Federal Register corrected the comment period deadline to February 12, 2001. A Federal Register notice of extension of the comment period with a deadline of February 28, 2001 was published on February 23, 2001. EIS documents were also mailed to federal and state agencies, Alaska Native and municipal offices, and anyone else who had requested them.

Subsistence Hearings

A subsistence hearing on the Draft EIS was held at the Community Hall in Kasaan, Alaska on January 15, 2001. Transcribed notes of all testimony are included in Appendix B of the Final EIS.

Public Meetings

Public meetings to describe the analysis process and answer public questions were held in the locations listed below.

- | | |
|---|-------------------|
| • Saltery Cove (in Saltery Cove) | February 6, 2001 |
| • Organized Village of Kasaan (in Kasaan) | February 23, 2001 |
| • Clover Bay Residents (in Ketchikan) | March 6, 2001 |
| • Sunny Cove Residents (in Ketchikan) | March 6, 2001 |
| • Saltery Cove (in Saltery Cove) | December 2, 2002 |
| • Saltery Cove (in Saltery Cove) | February 5, 2003 |

Analysis and Incorporation of Public Comment

The ID team analyzed and incorporated public comments and subsistence testimony into the Final EIS. Comments on the Cholmondeley Draft EIS were received from 170 agencies, tribes, organizations, and individuals. The 170 letters, faxes, phone calls, and e-mail messages were analyzed using a process called content analysis. The results of this analysis are included in Appendix B of the Final EIS. Comment letters are filed in the planning record.

Final EIS

Availability of the Final EIS was announced in the *Federal Register* and through notices in the local media. Documents were also mailed to Federal and State agencies, Native and municipal offices, and others who provided input on this project or requested a copy of them.

Coordination with Other Agencies

Division of Governmental Coordination

The Coastal Zone Management Act (CZMA) of 1976, as amended, pertains to the preparation of an EIS. While Federal lands are not included in the definition of the coastal zone as prescribed in the CZMA, the act does require that when federal agencies conduct activities or developments that affect the coastal zone, the activities or developments are consistent to the maximum extent practicable with the approved State Coastal Management Program. The Forest Service makes this determination.

The Alaska Coastal Management Plan incorporated the Alaska Forest Resources and Practices Act of 1979 (as amended) standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines and mitigation measures described in Chapters 2 and 3 of the Final EIS are comparable to or exceed state standards.

As required the Coastal Zone Management Act of 1972 (CZMA), the Forest Service has determined that the Cholmondeley Timber Sale is consistent, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program (ACMP). The State has objected to that determination, because it believes that certain features of the project are not fully consistent with specific provisions of the Alaska Forest Resources and Practices Act (AFRPA). One of those features is the construction of Road 2190000 in Sallery Cove. The decision on the Sallery Cove portion of the project is being deferred pending further clarification from the State; no action will be taken on that portion of the project at this time.

Another issue raised by the State relates to modifications of old growth reserves in the project area, which the State asserts is not fully consistent with AS 41.17.060(c)(7), which states "allowance shall be made for important fish and wildlife habitat." The fact that the Tongass Land Management Plan incorporates an old-growth habitat conservation strategy, comprised of small, medium, and large reserves distributed across the Tongass National Forest, is an allowance made for important fish and wildlife habitat. Other land allocations and numerous standards and guidelines included in the Forest Plan, as well as site-specific mitigation measures developed during project-level NEPA analysis also make allowance for important fish and wildlife habitat. Accordingly, we believe the Cholmondeley Timber Sale is fully consistent with AS 41.17.060(c)(7).

The State also asserts that establishing a LTF and associated temporary logging camp at Clover Bay would be inconsistent with AS 41.17.060(c)(3). This provision states "to the extent its capacity permits, forest land shall be administered so as to provide for the continuation of businesses, activities, and lifestyles that are dependent upon or derived from forest resources."

For these reasons the Forest Service maintains that the Cholmondeley Timber Sale is fully consistent with AS 41.17.060(c)(3).

Finally, the State asserts that establishing a LTF and associated temporary logging camp at Clover Bay would be inconsistent with AS 41.17.060(c)(6), which states “allowance shall be made for scenic quality in or adjacent to areas of substantial importance to the tourism and recreation industry.” There are numerous forest-wide standards and guidelines related to protecting visual resources and scenic quality. The 1,000-foot beach buffer protects scenic qualities adjacent to Clover Bay Lodge. In addition, the LTF will be constructed as a low-angle sliding ramp, a design with the least impact on scenic quality. The proposed project will also change the allocation of land immediately adjacent to the Lodge from development to non-development allocations, in order to protect the scenic qualities adjacent to the Lodge. For these reasons, we believe the Cholmondeley Timber Sale is fully consistent with AS 41.17.060(c)(6).

In summary, the Forest Service believes the State’s objections are based on interpretations of provisions of the Alaska Forest Resources and Practices Act that go beyond the language of that statute. Accordingly, under the Federal CZMA regulations, the Forest Service has the authority to proceed with the project if it believes the project is fully consistent with the ACMP, despite the State’s objections. The Forest Service will notify the State in writing of its intention to proceed before implementation of the project.

Interagency Biologist Team

An interagency team of biologists representing the Fish and Wildlife Service, Alaska Department of Fish and Game, and the Forest Service reviewed small and medium old-growth reserves for location and function and gave their recommendation in the project area.

USFWS and NMFS

A Biological Assessment was prepared and sent to the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service as part of the Section 7 consultation under the Endangered Species Act.

Consultation with National Marine Fisheries Service occurred to analyze essential fish habitat.

The Final EIS identifies the agencies that were informed of and/or involved in the planning process (see the Distribution List in Chapter 4 of the Final EIS). See also the discussion of subsistence in the section entitled “Findings Required by Law,” later in this ROD.

Further information on the coordination with other agencies is available in the planning record at the Craig Ranger District.

Alternatives Considered for Detailed Study

The Proposed Action (Alternative 5) and six other alternatives are considered in detail. The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) require a “no action” alternative be analyzed in every EIS. This alternative represents the existing condition against which other alternatives are compared. Alternative 1 is the no-action alternative. Alternatives 2 through 7 represent different means of satisfying

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the purpose and need, by responding with different emphases to the significant issues discussed in Chapter 1 of the Final EIS.

Alternative 1

This alternative would not propose any new timber harvest from the Cholmondeley Project Area at this time. It does not preclude timber harvest from other areas at this time, or from the Cholmondeley Project Area at some time in the future. This alternative serves as a benchmark by which effects of the action alternatives can be measured. The three old-growth habitat reserves within the Project Area would remain in their current locations, as mapped in the Forest Plan. This alternative provides limited opportunities to implement the access management plan, which is beneficial to many resources. The Alternative 1 (Existing Condition, Chapter 2, Final EIS) map shows the distribution of vegetation associated with no new timber harvest.

No timber harvest outputs are associated with this alternative. Management for visual quality, wildlife habitat, and semi-primitive recreation outputs would continue as it currently exists.

I did not select Alternative 1 (No Action) because it did not meet either component of the Purpose and Need.

Alternative 2

No road or LTF construction is proposed in Alternative 2 to reduce impacts to the roadless character of the McKenzie Roadless Area. Alternative 2 also addresses concerns about security, domestic water quality, and wind patterns, as expressed by the residents and lodge owners in the project area. Helicopters would be used to yard timber from all harvest units. Helicopter yarding allows more trees to be left in the units than ground-based methods. Thus, the visual impacts of harvest are moderated.

Alternative 2 proposes to harvest 1,511 acres of commercial forest land in 44 harvest units (Figure 2-2, Chapter 2, Final EIS). This proposed harvest would produce about 35.6 MMBF of timber. The average harvest unit size is 34 acres. The project area would be divided into five sale areas, the smallest of which would be about 5.1 MMBF.

I decided not to select Alternative 2 because by all economic measuring tools it shows the worst economic feasibility. Without a mechanism to decrease the costs associated with long helicopter-yarding distances, the vast majority of units fall into the very highest cost/MBF comparison category making four out of five of the offerings infeasible at low market conditions. The best way to overcome the economic situation is to build roads into the offerings to shorten yarding distances.

Alternative 3

Alternative 3 designs timber harvest methods to address concerns of the adjacent communities. It addresses concerns of domestic water quality, solitude and the natural setting, security, and wind patterns as expressed by the residents and lodge owners in the project area.

Alternative 3 proposes to harvest 1,489 acres of commercial forest land in 43 harvest units. This proposed harvest would produce about 34.0 MMBF of timber. The average harvest unit size is 35 acres. The project area would be divided into five sale areas, the smallest of which would be about 5.1 MMBF. The units north of Clover Bay, south of Saltery Cove, and west of Sunny Cove would be yarded by helicopters. One LTF would be constructed east of Sunny Cove in Cholmondeley Sound. Logs from the

units north and east of Sunny Cove would be yarded by a combination of ground-based equipment and helicopters. Ground-based equipment would require 4.6 miles of classified road construction. Unit 616-010, near Clover Bay, would not be harvested (Figure 2-3, Chapter 2, Final EIS).

I decided not to select Alternative 3 because, while it addressed most community issues, it also proved to be very economically infeasible and also deficit at most market conditions. Long yarding distances again were the problem.

Alternative 4

Alternative 4 emphasizes timber harvest and offering timber sales with the highest economic returns.

Alternative 4 proposes to harvest 941 acres of commercial forest land in 25 harvest units. This proposed harvest would produce about 23.7 MMBF of timber. The average harvest unit size is 36 acres. The project area would be divided into three sale areas, the smallest of which would be about 7.6 MMBF. Most of the units would be yarded using ground-based equipment. This would require building 14.9 miles of classified road and three LTFs. The LTFs would be built in McKenzie Inlet, the mouth of Clover Bay, and east of Sunny Cove in Cholmondeley Sound. Units along West Arm, Cholmondeley Sound and north of Monie Lake would be deferred from harvest (Figure 2-4, Chapter 2, Final EIS).

A short segment of road north of Clover Bay LTF would be built to access all units north of Clover Bay in this alternative. Other routes were analyzed. This route was considered to have the least potential for impacting other resources such as water quality and fish habitat if the road is required to be within Clover Bay Drinking Water Watershed. The sediment potential was greatly reduced with this new route.

I decided not to select Alternative 4 because it would drop approximately 12 MMBF with no apparent resource issue gain even-though positive feasibility was comparable to Alternative 5. This decreased volume also lowered expected revenue and anticipated logging industry jobs

Alternative 5

Alternative 5 is the updated proposed action and the preferred alternative in the Final EIS. This alternative emphasizes timber harvest to most closely meet outputs anticipated in the Forest Plan. All timber units available at this time are proposed for harvest. Silvicultural prescriptions and logging systems are designed to be the most economical while addressing resource concerns. Forest Plan standards and guidelines are implemented to meet required resource protection.

Alternative 5 proposes to harvest 1,511 acres of commercial forestland in 44 harvest units. This proposed harvest would produce about 35.6 MMBF of timber (Figure 2-5, Chapter 2, Final EIS). The average harvest unit size is 34 acres. The project area would be divided into five sale areas, the smallest of which would be about 5.1 MMBF. Most of the units would be yarded using ground-based equipment. This would require constructing 22.3 miles of classified road and three LTFs. The LTFs would be built in McKenzie Inlet, the mouth of Clover Bay, and east of Sunny Cove in Cholmondeley Sound.

A short segment of road directly west of Monie Lake will be built through the small old growth reserve in VCU 616 to access all units north of Monie Lake in this

alternative. Other routes were analyzed. This route was considered to have the least potential for impacting other resources such as water quality and fish and wildlife habitat. A portion of Road 2180000-1, near Clover Bay, has been relocated to the east to remove it from the drinking water watershed. The sediment potential was greatly reduced with the new route. The old growth reserve just north of Clover Bay has been modified by moving it east of Road 2180000-1.

Alternative 6

Alternative 6 has been added to the analysis since the Draft EIS to emphasize timber harvest that most closely meet outputs anticipated in the Forest Plan while addressing public concerns in the issue areas to the fullest extent possible. Unit 614-005 is dropped due to extremely poor economics. The road to the Sallery Cove units has been dropped to address water quality, wind, security, and scenic quality issues. Helicopter logging would be used in the Sallery Cove area to address visual, watershed, and lodge business concerns. Silvicultural systems proposed under this alternative would retain more structure on many planned units.

A new LTF is proposed west of Island Point to service units south of Doctor Point and North Monie sale areas. This eliminates the LTF in Clover Bay, the road from Clover Bay south of Unit 616-007, and many visual and lodge business concerns. The northern portion of Unit 616-010 would be dropped for visual concerns. New road 2180000-5 would originate from the Island Point LTF, and require Units 616-022, -023, -024, and -123 to be yarded with helicopter instead of cable systems. Roads would be closed to public vehicles after sale and post-sale activities are complete.

Log stringer bridges would be used on all stream crossings in the Sunny Cove Drinking Water Watershed. Roads would be closed to public vehicles during construction and after sale and post-sale activities are complete. Firearms would be prohibited on Sunny Cove and Sallery Cove roads during construction and logging activities.

Alternative 6 proposes to harvest 1,486 acres of commercial forest land in 43 harvest units. This proposed harvest would produce about 33.9 MMBF of timber (not including right-of-way volume) (Figure 2-6). The average harvest unit size is 35 acres. The project area would be divided into five sale areas, the smallest of which would be about 5.1 MMBF. Helicopter yarding is planned for 63 percent of the units and 77 percent have at least a portion of the acres planned for helicopter yarding. This alternative would require construction of 16.4 miles of classified road and two LTFs. The LTFs would be built west of Island Point and east of Sunny Cove in Cholmondeley Sound.

I decided not to select Alternative 6 because it also would be deficit in most market conditions. The extreme high cost of the Island Point LTF, its increased upland impacts of the larger sort yard, and more dangerous exposure make it a less desirable site. The additional road required and increased effects to riparian habitat make the Clover Bay LTF the preferred option.

Alternative 7

Alternative 7 has been added to the analysis since publication of the Draft EIS to better display the Interagency biological team's preferred old growth configuration for medium and small reserves. This alternative emphasizes the best biological mix of reserves as preferred by the interagency team of biologists. The small old growth

reserve north of Monie Lake would be more circular and encompass the largest contiguous patch of Productive Old-Growth (POG) in the watershed. See the Wildlife Habitat section in Chapter 3 of the Final EIS for a more in-depth discussion on how and why the reserves have been modified.

Helicopter yarding will be used for all units in Alternative 7, therefore, no roads or LTFs are proposed. Several units have been totally dropped due to the shift in old growth reserve boundaries. These include 614-001b, -002, 616-010, -011, -012, -018, -019, -020, 675-033, -037, 676-462, -472, -484, -489, -500, and 592. Portions of units dropped include 75 percent of Units 614-001a and 614-034b. Alternative 7 units include 614-005, 615-025, 616-024, -132, 674-032, -537, -548, -549, -550, -551, and -583.

Alternative 7 proposes to harvest 355 acres of commercial forestland in 13 harvest units. This proposed harvest would produce about 7.8 MMBF of timber (Figure 2-5). The average harvest unit size is 27.3 acres. The project area would be divided into five sale areas, the smallest of which would be about 1.6 MMBF. Silvicultural systems proposed under this alternative would be the same as planned in Alternative 4.

I decided not to select Alternative 7 because it did not meet the purpose and need of supplying substantial volume for market demands. At the same time, several of its offerings were deficit due to the projected use of helicopter yarding only.

Environmentally Preferable Alternative

No single factor can be used to determine which alternative is environmentally preferable. Maintaining the basic productivity of the land, the quality of lifestyle of the local residents, and the aesthetic values for the lodges and their clientele are vitally important.

Based on a comparison of the alternatives shown in Table R-1, Table 2-1 of Chapter 2 and the discussion contained in Chapter 3 in the Chohmondeley Final EIS, Alternative 1, the No-action Alternative, would result in the least environmental disturbance and is therefore the environmentally preferable alternative.

All alternatives considered in detail have varying levels of environmental effects depending upon the emphasis of the alternative. Implementation of Alternative 2 would cause the least adverse environmental effects of the action alternatives as it proposes 100 percent helicopter yarding with no road building. This alternative, in its entirety, is not economically feasible. Without some mechanism to decrease the costs associated with long helicopter yarding distances, the majority of the units fall into the highest cost/MBF helicopter costing comparison category. Alternative 7 emphasizes the best biological mix of reserves as preferred by the interagency team of biologists. This alternative has the lowest amount of volume and the highest stumpage values. However, it takes a large area of the more viable ground out of production and would fail to meet the Forest Plan objectives of providing a timber supply sufficient to meet the annual and planning cycle market demands for Tongass National Forest timber. Alternatives 3 and 6 propose more helicopter yarding than Alternatives 4 and 5; however, as with Alternative 2, these alternatives are not economically feasible. Alternatives 4 and 5 have similar environmental effects. Alternative 5, while not the environmentally preferable alternative, was selected because it best meets the purpose and need for the project, is consistent with the Forest Plan, and responds to issues raised during scoping and analysis.

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Table R-1: Comparison of Alternatives

			Alternatives						
CATEGORY	Units	ROD1	1	2	3	4	5	6	7
Undeveloped Character									
Average size of units	Acres	33	0	34	35	36	34	35	27
Total harvest	Acres	1225	0	1511	1489	941	1511	1486	355
New log transfer facilities (LTFs)	Each	2	0	0	1	3	3	2	0
Existing productive old growth remaining	Percent	93	100	92	92	95	92	92	98
ROS class Primitive (P) in project area	Percent	43	89	37	37	53	37	37	70
ROS class Semi-Primitive Non-Motorized (SPNM) in project area	Percent	30	10	33	35	29	33	34	22
Recreation sites with change in ROS (Total =27)	Number	15	0	16	16	10	16	16	13
High Concern Watersheds With Activities	Number	2	0	4	3	2	4	4	2
Watersheds with activities (out of 53 in the project area)	Number	22	0	24	19	16	24	24	16
Visual Quality Objective response on: ¹									
West Arm, Cholmondeley Sound	Meets VQO	meet	exc.	meet	meet	exc.	meet	meet	meet
Sunny Cove	Meets VQO	meet	exc.	exc.	meet	exc.	meet	meet	exc.
Doctor Point	Meets VQO	meet	exc.	meet	meet	meet	meet	meet	meet
Clover Bay	Meets VQO	meet	exc.	exc.	exc.	meet	meet	exc.	exc.
Trollers Cove	Meets VQO	exc.	exc.	exc.	exc.	exc.	exc.	exc.	exc.
Saltery Cove	Meets VQO	n/a	exc.	exc.	exc.	exc.	exc.	exc.	exc.
Domestic Water Supply									
Percent of Domestic Watershed Harvested	Percent								
Saltery – CU5A (domestic water)		n/a	0	16	16	16	16	14	3
Clover		14	0	14	0	14	14	14	0
Sunny		9	0	9	9	9	9	8	0
Open roads in domestic watershed after salvage	Miles	0	0	0	0	0	0	0	0
Stream Crossings in Private Domestic Watersheds									
Saltery	Each	n/a	0	0	0	2	2	0	0
Clover	Each	0	0	0	0	0	0	0	0
Sunny	Each	4	0	0	4	4	4	4	0
Buffer Width on Domestic Watershed Streams									
Saltery	Feet	n/a	n/a	250	500	250	250	500	250
Clover	Feet	100	n/a	100	n/a	100	100	100	100
Sunny (Drinking Water Creek)	Feet	100	n/a	100	100	100	100	100	100
Greatest Tree Retention in Harvest Units, 1=Highest									
Saltery	Ranking	n/a	1	3	2	4	4	2	1
Clover	Ranking	4	1	3	2	4	4	2	1
Sunny	Ranking	3	1	2	3	3	3	3	1
Wind									
Non-clearcut harvest opportunities	Acres	392	0	412	333	231	412	333	231
Unharvested Productive Old-growth acres remaining	M Acres ²	16.9	18.0	16.6	16.6	17.2	16.6	16.6	17.7
Proposed units with high risk to windthrow	Percent	48	0	41	26	48	41	42	23
Safety									
Classified road construction	Miles	21.1	0	0	4.6	14.9	22.3	16.4	0
Dist.to Closest Open Road During Harvest Operation									
Saltery Cove	Miles	n/a	n/a	n/a	n/a	0.4	0.4	n/a	n/a
Clover Bay	Miles	0.4	n/a	n/a	n/a	0.4	0.4	1.7	n/a
Sunny Cove	Miles	0.3	n/a	n/a	0.3	0.3	0.3	0.3	n/a
Roads open to ATV after salvage	Miles	0	0	0	0	0	0	0	0

¹ exc. =exceeds – meets a standard higher than Forest Plan

² M Acres = thousands of acres

Table R-1: Comparison of Alternatives (continued)

			Alternatives						
CATEGORY	Units	ROD1	1	2	3	4	5	6	7
Subsistence									
Significant restrictions to access	Response	none	none	none	none	none	none	none	none
Deer habitat capability affected	Ranking	most	none	most	mod	least	most	mod	least
Significant Possibility of a Significant Restriction									
Deer	Response	no	no	no	no	no	no	no	no
Bear, Furbearers	Response	no	no	no	no	no	no	no	no
Salmon, Other Finfish	Response	no	no	no	no	no	no	no	no
Waterfowl	Response	no	no	no	no	no	no	no	no
Marine Mammals	Response	no	no	no	no	no	no	no	no
Connection to other island roads	Response	none	none	none	none	none	none	none	none
Open roads after salvage	Miles	0	0	0	0	0	0	0	0
Indir. and cum. effects to implement F.P. over rotation	Response	none	none	none	none	none	none	none	none
Economics (Timber) (does not include ROW)									
Estimated Net stumpage (low-market rates)	\$ / MBF ¹	50	0	-370	-290	50	20	-160	0
Estimated Net stumpage (high-market rates)	\$ / MBF	160	0	-190	-110	230	200	20	110
Estimated Present Net Value	\$ MM ²	2.2	0	-9.0	-6.1	4.3	5.2	-1.6	0.3
NEAT Analysis ³									
Est. Stumpage Rate	\$/CCF	-72	-	-113	-91	-45	-46	-76	-71
Est. Stumpage w/cedar export & higher util. Stand.	\$/CCF	-37	-	-34	-13	26	27	-3	8
Est. Bid Value	\$MM	-3.9	-	-7.3	-6.1	-2.0	-3.4	-5.4	-1.1
Est. Bid Value w/cedar export & higher util. Stand.	\$MM	-1.7	-	-1.8	-0.8	1.0	1.7	-0.2	0.1
Total jobs in logging in domestic option	job years	145	0	172	176	119	197	187	40
Total income generated in logging industry	\$MM	6.4	0	7.7	7.9	5.3	8.8	8.3	1.8
Non-Interchangeable Component II									
Saltery	Percent	n/a	72	62	62	62	62	59	97
Clover	Percent	28	54	28	27	15	28	28	30
Sunny	Percent	60	67	60	60	69	60	59	46
Timber offerings (sales) anticipated	Each	4	0	5	5	3	5	5	5
Potential Impact to recreational work force (1=most)	Ranking	2	8	7	5	3	1	4	6
High cost yarding techniques (skyline & helicopter)	Acres	764	0	1511	1415	396	859	1074	355
Average cost yarding techniques (cable and shovel)	Acres	461	0	0	74	545	652	412	0
Volume per mile of new road	MMBF	1.4	0	0	7.7	1.6	1.6	2.1	0
Volume offered (no ROW included)	MMBF	27.0	0	35.6	34.0	23.7	35.6	33.9	7.8
Roadless									
Inventoried Roadless Area (519) Remaining	M Acres	76.1	80.6	80.6	79.3	76.8	75.0	76.2	80.6
Effects on Solitude/pristine values (1=most)	Ranking	4	8	5	6	2	1	3	7
New log transfer facilities (LTFs)	Each	2	0	0	1	3	3	2	0
Changes to Natural ROS settings at Key access pts ⁴									
Swan Lake		r/rm	r/ spnm	r/rm	r/rm	r/rm	r/rm	rm	r/ spnm
Saltery Cove		n/a	r/ spnm	r/rm	r/rm	r/rm	r/rm	r/rm	r/ spnm
Spiral Cove		p	p	p	p	p	p	p	p
Trollers Cove		rm/ spnm	p	rm/ spnm	rm/ spnm	p	rm/ spnm	rm/ spnm	rm/ spnm
Monie Lake		rm	p	rm	rm	rm/ spnm	rm	rm	p
Clover Bay		rm/ spnm	p	rm/ spnm	rm/ spnm	rm/ spnm	rm/ spnm	rm/ spnm	p
Sunny Cove		r/rm	r/ spnm	r/rm	r/rm	r/rm/ spnm	r/rm	r/rm	r/ spnm

¹ \$/MBF = Value in dollars per thousand board feet of timber.² \$ MM = Value in millions of dollars.³ NEAT analysis with adjusted quarters values.⁴ p=primitive; spnm=semi-primitive, non-motorized; rm=roaded modified; r=rural;

Planning Record

The planning record for this Project includes the Draft EIS, Final EIS, Forest Plan, all material cited or incorporated by reference in the EIS, and all materials produced during the environmental analysis of this Project. The planning record is available for review at the Craig Ranger District.

Mitigation

The analysis documented in the EIS discloses possible adverse impacts that may occur from implementing actions proposed under each alternative. Measures have been formulated to mitigate or reduce these impacts. These measures were guided by the direction from the Forest Plan previously described in this decision document.

ID Team specialists use on-the-ground inventories, computer (GIS) data, and aerial photographs to prepare the unit cards for each harvest unit in the unit pool for the project. Cards are also prepared for each segment of road. Resource specialists include their concerns on the cards and then describe how the concerns can be mitigated (if not completely avoided) in the design of each unit and road segment. These cards may be found in Appendices 2 and 3 of the ROD. Resource concerns and mitigation measures may be refined further during final layout, when specialists have one more opportunity to revise their unit and road card recommendations.

Applicable Forest Plan standards and guidelines, BMPs used to meet the requirements of the Clean Water Act, and project-specific mitigation measures are identified on the harvest unit and road cards. Appendix C of the Final EIS includes a complete list of the project-specific measures, and a table linking each measure to the applicable harvest units and road segments. Also refer to the mitigation listed in the ROD under sections “modifications” of the decision, and “description of the selected alternative”.

Monitoring

Project-specific monitoring assesses how well the project design and mitigation measures protect natural resources and their beneficial uses. Monitoring does not take the place of mitigation measures but helps to measure their effectiveness. Project-specific monitoring related to the significant issues follows.

- Private water supply watersheds will be monitored to determine whether Alaska Water Quality Standards for turbidity are achieved. See the Chapter 2 in the FEIS for details.
- In the first few years after harvest, reserve trees will be monitored to determine whether reserve trees stand over time and to verify assumptions about wind patterns and speed.
- Archaeological monitoring will be conducted on a sample of areas of disturbance in high sensitivity zones (LTFs and roads leading to them) to evaluate the effectiveness of the Forest Service sampling strategy and sensitivity model.

- Recreation monitoring will occur to determine changes in the type and amount of recreation use occurring near the Saltery and Sunny Cove residences and Sportsman Cove Lodge and if it is associated with the road systems.
- Scenery Resources will be monitored to determine how well harvest methods other than clearcuts meet the desired visual objectives.

Findings Required By Law

National Forest Management Act (NFMA)

The National Forest Management Act requires specific determinations in this Record of Decision including: consistency with the Forest Plan, a determination of clearcutting as the optimal method of harvesting, and specific authorizations of created openings over 100 acres in size.

Tongass Land Management Plan

This decision is consistent with the Forest Plan. I have reviewed the management direction, standards and guidelines, and the schedule of activities for the VCU's included in the Selected Alternative. I find the Selected Alternative to be consistent with these elements. The activities authorized in this decision are consistent with the standards and guidelines and management prescriptions of the Forest Plan. All required interagency review and coordination has been accomplished. New or revised measures resulting from this review have been incorporated.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14-219.27). Application of Forest Plan direction for the Cholmondeley Project ensures compliance with NFMA at the project level. Specific NFMA findings pertaining to silvicultural systems are included in the Final EIS, Chapter 3 and the project planning record.

Clearcutting as the Optimal Method of Harvesting

In order to comply with Forest Plan Standards and Guidelines and to mitigate for wildlife and scenery, no units in the selected alternative are proposed for traditional (100 percent removal) clearcutting. Reserve trees will be left. The Forest Plan (pages 4-96 and 4-97) provides guidance for use of even-age management. Clearcutting (an even-aged method) is used to preclude or minimize the occurrence of potentially adverse impacts from windthrow. It is also used to minimize mistletoe infections, logging damage, or other factors affecting forest health. Clearcutting also addresses economic concerns with lower logging costs. Specific information and rationale for use of this prescription is shown in the silvicultural prescriptions which are part of the project planning record, in the unit cards, and in the Final EIS.

Created Openings Over 100 Acres in Size

No created openings will exceed 100 acres.

Tongass Timber Reform Act (TTRA)

Harvest units were designed with no less than 100-foot buffer zones for all Class I streams and Class II streams which flow directly into Class I streams, as required in Section 103 of the TTRA. The actual widths of these buffers follow Forest Plan Riparian Standards and Guidelines that greatly exceed TTRA requirements.

Endangered Species Act

I have determined that this action will not have any adverse impacts on any threatened or endangered species in the Cholmondeley Project Area. The Forest Service consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. These agencies concurred that the proposed project is not likely to affect any

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threatened or endangered species. A complete biological assessment is included in Appendix D of the Final EIS and in the planning record.

Bald Eagle Protection Act

Management activities within 330 feet of an eagle nest site are restricted by an Interagency Agreement between the Forest Service and the U. S. Fish and Wildlife Service to facilitate compliance with the Bald Eagle Protection Act. The Selected Alternative plans no road construction within 330 feet of any known bald eagle nests.

Clean Water Act

The design of harvest units and roads for the Selected Alternative were guided by standards, guidelines, and direction contained in the Forest Plan and applicable Forest Service manuals and handbooks. The ROD Appendices 2 and 3, Unit Design and Road Cards, contain specific details on practices prescribed to prevent or reduce non-point sediment sources. Site-specific application and monitoring of BMPs is expected to comply with applicable State Water Quality Standards Regulations.

All roads, landings and rock pits would be designed and constructed in accordance with the applicable BMPs listed at 33 CFR 323.4(a). No permits under Section 404 of the Clean Water Act would be required.

A monitoring plan to detect and evaluate possible effects of bark accumulations, oil sheens, and surface runoff will be implemented as a part of permitting processes for log-transfer facilities (BMP 14.4, FSH 2509.22).

Clean Air Act

Emissions anticipated from the implementation of the Selected Alternative would be of short duration and are not expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Essential Fish Habitat

The potential effects of the Cholmondeley Timber Sales project on essential fish habitat have been evaluated. For specific information regarding essential fish habitat and the potential impacts refer to the Cholmondeley Project Area Soil, Floodplain, Riparian, and Wetland Resources Report and Addendum, which evaluates landslide potential on stream courses within the project area. Also, see the Cholmondeley Project Area Watershed Analysis and cumulative effects for fisheries and water resources on potential impacts to essential fish habitat based on proposed harvest activities within the Cholmondeley Project Area. Analysis completed in the cumulative effects sections for fisheries, soils, and water indicate no significant changes to Riparian Management Areas (RMAs) and floodplains due to proposed management activities.

In evaluating the potential effects on essential fish habitat, the following factors were considered:

- Forest Plan standards and guidelines for process group riparian buffers have been applied in all instances on Class I, II, and III streams.
- The BMPs described in the unit and road cards for the Selected Alternative provide assurance of water quality and aquatic habitat protection for all freshwater streams and marine waters affected by the project.
- The exclusion of harvest on slopes greater than 72 percent, unless field review by professional soil scientists, indicates harvest of these slopes can be accomplished with no damage to other resources.
- Road construction in the Selected Alternative includes no new road crossings of Class I or II streams.

Based on the above factors, the risk of measurable impact on essential fish habitat has been minimized in the Project Area. I have determined that the Selected Alternative is unlikely to adversely affect essential fish habitat.

National Historic Preservation Act (NHPA)

Heritage resource surveys of various intensities have been conducted in the Cholmondeley Project Area. The Forest Service has consulted the State Historical Preservation Office (SHPO) and complied with the provisions of 36 CFR, part 800. Forest Service timber-sale contracts contain enforceable measures for protecting any undiscovered heritage resource that might be encountered during sale operations.

I have determined, consistent with the Forest Service direction on heritage resources, that there will be no significant effects on heritage resources. We have completed the Section 106 review for all timber harvest related activities displayed in the Final EIS. This includes roads and units in all alternatives. All identified historic properties have been avoided (Forest Plan, page 4-15).

The National Historic Preservation Act (NHPA) was amended in 1992 and implementing regulations were issued in January 2001. NHPA requires federal agencies to consult with "Indian Tribes" (defined in the amendments as federally recognized Indian Tribes and Alaska Native Claims Settlement Act (ANCSA) Regional and Village Corporations). Consultation with Indian Tribes covers a wide range of topics from field inventory strategies, to National Register of Historic Places eligibility of identified properties, to determinations of potential effects.

Federal Cave Resource Protection Act of 1998

The actions in the Selected Alternative will not have a direct, indirect, or cumulative effect on any significant cave. There are few occurrences of carbonate rock and associated cave resources within the Project Area. Field reconnaissance identified areas of concern and I have applied Forest Plan standards and guidelines on these areas.

Alaska National Interest Lands Conservation Act (ANILCA) Section 810

A subsistence evaluation was conducted for the six action alternatives considered in detail for the Cholmondeley Final EIS, in accordance with Alaska National Interest Lands Conservation Act (ANILCA) Section 810. An open house followed by ANILCA Section 810 hearing was held in Kasaan. Subsistence uses were also discussed with stakeholders in meetings in Saltery Cove and Ketchikan.

The evaluation of comments from the public, subsistence hearing testimony, and additional analysis indicates that the potential foreseeable effects from the alternatives in the Cholmondeley Project Area do not indicate a significant possibility of a significant restriction of subsistence uses for bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods such as berries and roots. Analysis does indicate that the cumulative effects of all alternatives including the no-action present a significant possibility of a significant restriction of subsistence uses for deer in WAA 1214. In WAA 1214, the distribution and abundance of both marten, deer and wolf are currently below recommended levels. Only 1% of the Cholmondeley Project Area falls within WAA 1214 and no additional harvest is proposed. This effect is due to significant harvest to the west, mainly west of McKenzie Inlet. This possibility exists regardless of which alternative is implemented, including the No-Action Alternative presented in the Final EIS. This restriction, if it occurs, would be a result of:

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- (1) a cumulative decrease in habitat capability when existing second-growth forest stands mature and shade out forage that could decrease the abundance or distribution of deer,
- (2) a very severe winter, which does occur periodically, causing high deer mortality as happened in the late 1960's,
- (3) an increase of predator populations, especially wolves, due to less aggressive predator harvests, and
- (4) anticipated human population growth with its associated increase in subsistence hunter demand when compared to the habitat capability to produce deer.

Subsistence Determinations

Section 810 (a)(3) of ANILCA requires that when a use, occupancy, or disposition of public lands may result in a significant possibility of a significant restriction, a determination must be made whether (1) such a restriction is necessary, consistent with sound management principles for the utilization of public lands, (2) the proposed activity involves the minimum amount of public lands necessary to accomplish the purposes of the use, and (3) reasonable steps will be taken to minimize adverse impacts on subsistence uses and resources resulting from the actions.

Necessary, Consistent with Sound Management of Public Land

The Selected Alternative has been examined to determine whether the associated potential restriction to subsistence use is necessary, consistent with the sound management of public lands. In this regard, the laws and direction that have been considered include: (1) the National Forest Management Act of 1976 and its implementing regulations; (2) the Alaska National Interest Lands Conservation Act (ANILCA) of 1980; (3) the Tongass Land and Resource Management Plan (1997, as amended); (4) the Tongass Timber Reform Act (TTRA) of 1990; (5) the Alaska State Forest Practices Act; (6) the Alaska Coastal Management Program, (7) the Multiple Use Sustained Yield Act (1960), and USDA-FS Subsistence Management and Use Handbook (FSH 2609.25).

Management activities on National Forest System lands must provide for the multiple-use and sustained yield of renewable forest resources in accordance with the Multiple-Use Sustained Yield Act of 1960. Multiple-use is defined as "the management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people (36 CFR 219.3). The alternatives presented in the Final EIS represent different ways of managing the resources of the project area in combinations that are intended to meet these needs. Each provides a different mix of resource uses and opportunities, and each has some potential to affect subsistence uses. Given the framework and emphasis of the Selected Alternative, the possibility of a restriction is necessary, consistent with sound management of public land.

ANILCA Title VIII places an emphasis on the maintenance of subsistence resources and lifestyles. However, the Act also provides for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people and recognizes that public lands are necessary and appropriate for more intensive uses. The Act also requires the Forest Service to make available 4.5 billion board feet per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement, but directs the Forest Service to seek to meet market demand for timber to the extent

consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law.

As described in Appendix A of the Final EIS, the Selected Alternative is necessary as a component of the timber management program designed to implement the Forest Plan and to meet TTRA direction. There is currently a market demand for timber, a limited timber supply from other sources, and an under-utilized mill capacity in the region. The volume from the Selected Alternative is a component of the 10-year timber sale schedule which attempts to provide timber to industry in an even-flow over the planning cycle. The timber volume for this project was also designed to be sold in multiple small sales over a period of several years in order to offer sales for smaller timber operators in the area. The Selected Alternative can help meet the Forest Plan and TTRA objectives, while also providing reasonable protection measures for forest resources, especially for subsistence. It is consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

Based on a review of the subsistence hearing testimony and the analysis conducted in the Final EIS, it is apparent that all of the alternatives may involve some potential impact to subsistence deer use in the future. Due to the cumulative effect of past, present and reasonably foreseeable actions, there is no alternative, including the no-action alternative, that would meet Forest Plan and TTRA objectives and yet completely avoid a significant possibility of a subsistence restriction somewhere in the Tongass National Forest. From the analysis of the information presented in the Final EIS and ROD, and the guidance provided by the documents and laws listed above, I have determined that the actions involved in the implementation of the Selected Alternative are necessary, consistent with sound management of public lands and strike the best balance between meeting the needs of the public and protecting the forest resources.

Amount of Land Necessary to Accomplish the Purpose of the Proposed Action

The amount of public land involved to implement the Selected Alternative (considering sound multiple-use management of public lands) is the minimum necessary to accomplish the purpose of the Selected Alternative. Most of the Tongass National Forest is used by one or more rural communities for subsistence deer hunting purposes. It is not possible to lessen timber harvest in one area and concentrate it in another locale without impacting one or more rural communities' important subsistence use areas. In addition, harvestable populations of subsistence wildlife species could not be maintained in a natural distribution across the forest if harvest were concentrated in specific areas. A well-distributed population of species is required by the National Forest Management Act and is one of the objectives of the Forest Plan.

The Forest Plan allocated many of the important subsistence use areas to land use designations that do not allow timber harvest. Other areas that are important to subsistence use were protected through standards and guidelines such as the 1,000-foot beach and estuary buffers and the stream-side Riparian Management Areas that do not allow timber harvest. Of the 28,440 acres of National Forest System lands within the Cholmondeley Project Area, the Forest Plan allocated 17 percent of the area to the non-development land use designations of Old-growth Habitat, which does not allow timber harvest, and 83 percent to development land use designations such as Timber

Production, Modified Landscape, and Scenic Viewshed. These designations provide for resource use and development for commodity resources such as timber.

The minimum amount of land was used to resolve resource concerns while meeting the purpose and need for this project in a practical and efficient manner. The Selected Alternative harvests only three percent of the total Cholmondeley Project Area.

Partial harvest treatments using two-aged and even-aged silviculture systems are used for all units. Although the partial harvest units involve more acreage than traditional clearcutting units, the effects to resources will be less than the impact of clearcutting, especially for future effects, by providing more constant forage production. Resources are protected to the maximum extent practicable and the Selected Alternative meets or exceeds the Forest Plan Standards and Guidelines.

Past harvest practices of clearcutting in the Cholmondeley Project Area will also affect the future deer habitat capability. However, only a minimal amount of harvest has occurred in the project area (132 acres). The Selected Alternative will result in a cumulative decrease of 13 percent by the year 2095. The use of partial harvest, as designed for the project, will not create the large openings that past clearcutting did, and future changes in habitat capability will not be as great as with clearcutting. This decline will occur when the existing second-growth stands reach complete canopy closure, which will result in a reduction of forage for deer.

The greatest risk to meeting subsistence demand in the future is primarily related to the anticipated human population growth and its associated increase in subsistence hunter demand when compared to the habitat capability to produce deer. This anticipated population growth will happen independently of this proposed project.

Management activities cannot completely avoid all subsistence areas due to their location and broad extent across the Forest. Other areas that could be harvested may be limited by additional resource concerns such as soil and water protection, high value wildlife habitat, economics, scenic quality, or unfeasible unit and road design. The impact of viable timber harvest projects usually includes the alteration of old-growth habitat which reduces habitat capability for old-growth associated species.

The Cholmondeley Project involves the minimum amount of public land necessary and strikes a balance between meeting the needs of the public and protecting forest resources. Choosing any alternative (including the no-action alternative) other than the Selected Alternative or locating harvest in another location on Prince of Wales Island would not avoid or substantially lessen the risk to subsistence use in the future.

Reasonable Steps to minimize Adverse Impacts Upon Subsistence uses and Resources

The Forest Plan took considerable steps to minimize adverse impacts to subsistence uses and resources. Forest Plan standards and guidelines protect important deer winter habitat. Other reasonable steps taken to minimize adverse impacts to subsistence resources include: the overall Forest Plan land use designation strategy, the old-growth reserve strategy, travel and access management planning, Forest Plan Standards and Guidelines for stream, beach and estuary buffers, and the use of silvicultural systems that maintain components of overstory tree canopy, such as two-aged and uneven-aged management with reserve trees.

The Selected Alternative will construct approximately 21 miles of new roads. All new roads will be closed after completion of harvest and salvage operations. The Selected

Alternative will maintain the current road density of 0.3 miles per square mile for the project area. Therefore, the current level of access to subsistence species will be maintained. For more information, see the Transportation Section in Chapter 3 of the FEIS.

Most of the high value deer winter habitat that is available to be harvested is not proposed for timber harvest as part of the project. Approximately 9 percent of the high value deer winter habitat would be harvested under the Selected Alternative. This will be mitigated by using silviculture systems with reserve trees. For more information, see the Issue 1, Deer Hunting of Chapter 3 in the Final EIS.

The Selected Alternative reflects a reasonable balance between the projected need for timber from the project area to help meet the Forest Plan, ANILCA, and TTRA timber-related objectives, and the continued protection of subsistence uses and resources. Impacts on subsistence have been minimized throughout the design of the individual harvest units and road corridors, and through the formulation of the alternatives. I have determined that reasonable measures to minimize impacts on subsistence have been adopted to the maximum extent practicable while still meeting the purpose and need for this project.

Consumers, Civil Rights, Minorities, and Women

No negative impacts to the civil rights of individuals or groups, including minorities and women, are anticipated to be associated with this Project. Additional information can be found in the Forest Plan Final EIS, Chapter 3, sections on Economic and Social Environment.

Executive orders

Executive Order 11988

Executive Order 11988 directs Federal agencies to take action to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. The numerous streams in the Project Area make it impossible to avoid all floodplains during timber harvest and road construction. The design of the proposed developments and the application of BMPs combine to minimize adverse impacts on floodplains.

Executive Order 11990

Executive Order 11990 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands. The Selected Alternative avoids most identified wetlands; however, many small wetlands or muskegs occur as inclusions within forested areas. These areas may be altered by timber harvest or road construction. Techniques and practices required by the Forest Service serve to maintain the wetland attributes including values and functions. It is estimated there will be only minimal loss of wetlands with any of the alternatives. Soil moisture regimes and vegetation on some wetlands may be altered in some cases; however, these altered acres would still be classified as wetlands and function as wetlands in the ecosystem.

Executive Order 12898

Executive Order 12898 directs Federal agencies to identify and address the issue of environmental justice, i.e., human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Executive Order specifically directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife. The issue of

Record of Decision #1

environmental justice has been addressed through the Cholmondeley environmental analysis by identifying low income or Native communities that may be affected by the proposed action; by ensuring that scoping and public involvement activities reach those communities; by evaluating the effects of the proposed action on such communities; and by documenting the analysis. Detailed discussion of potential project effects on communities and subsistence is presented in the Socioeconomic Environment and Subsistence sections of Chapter 3.

An open house, followed by ANILCA Section 810 hearing, was held in Kasaan.

No negative impacts to low income or Native communities are anticipated from implementation of the Selected Alternative.

Executive Order 12962

Executive Order 12962 requires Federal agencies to evaluate the effects of proposed activities on aquatic systems and recreational fisheries. The Selected Alternative attempts to minimize the effects upon aquatic systems through project design, watershed analysis, and application of Forest Plan standards and guidelines, BMPs, and site-specific mitigation measures. Recreational fishing opportunities will remain essentially the same because aquatic habitats are protected through implementation of BMPs and riparian buffers.

The Coastal Zone Management Act of 1972

The Coastal Zone Management Act of 1972, as amended, while specifically excluding Federal lands from the coastal zone, requires that a Federal agency's activities be consistent with the enforceable policies of a State's coastal management program to the maximum extent practicable when that agency's activities affect the coastal zone.

Based on the analysis in the Final EIS and review of the Alaska Forest Practices Act, I have determined that the Selected Alternative is consistent, to the maximum extent practicable, with the enforceable policies of the Alaska Coastal Management Program.

The State has objected to that determination. Accordingly, under the Federal CZMA regulations, the Forest Service has the authority to proceed with the project if it believes the project is fully consistent with the ACMP, despite the State's objections. The Forest Service will notify the State in writing of its intention to proceed before implementation of the project.

Federal and State Permits, Licenses, and Certifications

Prior to implementing the proposed timber sale, various permits must be obtained from Federal and State agencies. Administrative actions on these permits would be initiated after the EIS is filed with the Environmental Protection Agency. The agencies and their responsibilities are listed below.

U.S. Army Corps of Engineers

Approval of discharge of dredged or fills material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)

Approval of construction of structures or work in navigable waters of the United States (Section 10 of the Rivers and Harbors Act of 1899)

U.S. Coast Guard

Coast Guard Bridge Permit (in accordance with the General Bridge Act of 1946) required for all structures constructed across navigable waters of the U.S.

U.S. Environmental Protection Agency

Storm water discharge permit

National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act)

State of Alaska, Department of Environmental Conservation

Certification of compliance with Alaska Water Quality Standards (Section 401 Certification)

Solid Waste Disposal Permit (Section 402 of the Clean Water Act)

Implementation Process

Implementation of this decision may occur no sooner than 50 days following publication of the legal notice of the decision in the *Juneau Empire*, published in Juneau, Alaska, if no appeal is received.

This project will be implemented in accordance with Forest Service Manual (FSM) and Handbook (FSH) direction for Timber Sale Project Implementation in FSM 2431.3 and FSH 2409.24. This direction provides a bridge between project planning and implementation and will ensure execution of the actions, environmental standards, and mitigations approved by this decision, and compliance with the TTRA and other laws.

Implementation of all activities authorized by this ROD will be monitored to ensure that they are carried out as planned and described in the Final EIS and ROD Appendices 2 and 3, Unit Design and Road Cards, unless modified consistent with direction in the FSM 2432.3 and FSH 2409.18.

Unit Design and Road Cards are contained in ROD Appendices 2 and 3. These cards are an integral part of this decision because they document the specific resource concerns, management objectives, and mitigation measures to govern harvest unit layout and road construction. These cards will be used during the implementation process to assure that all aspects of the project are implemented within applicable standards and guidelines and that resource impacts will not be greater than those described in the Final EIS. Similar cards will be used to document any changes to the planned layout, as the actual layout and harvest of the units occurs with project implementation. The implementation record for this project will display:

- each harvest unit, transportation facility, and other project components as actually implemented,
- any proposed changes to the design, location, standards, and guidelines, or other mitigation measures for the project, and
- the decisions on the proposed changes.

Process for Change During Implementation

Proposed changes to the authorized Project actions will be subject to the requirements of the NEPA and other laws concerning such changes.

Record of Decision #1

In determining whether and what kind of further NEPA action is required, the Forest Supervisor will consider the criteria in 40 CFR 1502.9(c) and FSH 1909.15, sec. 18, for whether to supplement an existing EIS. In particular, the Forest supervisor will consider whether the proposed change is a substantial change to the intent of the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. Cumulative impacts will be considered.

The intent of field verification is to confirm inventory data and to determine the feasibility and general design and location of a unit or road, not to locate the final boundaries or road locations. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency. This will usually entail adjusting the boundary to coincide with logical logging setting boundaries. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, sec. 18.

Right to Appeal

This decision is subject to administrative appeal. Organizations or members of the general public may appeal this decision according to Title 36 Code of Federal Regulations (CFR) part 215. The appeal must be filed within 45 days of the date that legal notification of this decision is published in the Juneau Empire, the official paper of record. The written Notice of Appeal must be filed with:

Regional Forester, Alaska Region
US Department of Agriculture, Forest Service
P.O. Box 21628
Juneau, AK 99802-1628

It is the responsibility of those who appeal a decision to provide the Regional Forester with sufficient written evidence and rationale to show why the decision by the Forest Supervisor should be changed or reversed. This written notice of Notice of Appeal must:

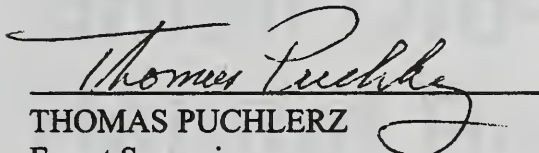
- State that the document is a Notice of Appeal filed pursuant to 36 CFR Part 215;
- List the name, address, and, if possible, the telephone number of the appellant;
- Identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official;
- Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects;

Record of Decision #1

- State how the Responsible Official's decision fails to consider comments previously provided, either before or during the comment period specified in 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation or policy.

For additional information concerning this decision contact the District Ranger at Craig Ranger District.

Dale Kanen
USDA Forest Service
Box 500 Craig, AK 99921
907-826-3271


THOMAS PUCHLERZ
Forest Supervisor
Tongass National forest

4/23/03
Date

Appendix 1

Forest Plan

Significance Analysis:

Small Old-growth

Habitat Reserve

Adjustments in VCU

615, 616, 617, 675,

and 676

Appendix 7

Forest Plan

Environmental Analysis

Small Old-growth

Habitat Reserves

Adjustments in VCU

615, 616, 617, 622

and 626

Appendix 1

Forest Plan

Significance Analysis:

Small Old-growth

Habitat Reserve

Adjustments in VCUs

615, 616, 617, 675,

and 676

Based on the project level analysis process as described in the old-growth management prescriptions and Appendix K of the Tongass National Forest Land and Resource Management Plan (Forest Plan), the old-growth reserves located in Value Comparison Units (VCUs) 616, 617, 675, and 676 in the Cholmondeley Project Area have been adjusted to better meet size, location, and/or habitat composition criteria in these VCUs. The size of the small old-growth reserve in VCU 615 is only slightly increased to adjust for mapping errors.

The Secretary of Agriculture's implementing regulation indicates the determination of significance to be "...based on an analysis of the objectives, guidelines and other contents of the forest plan" (36 Code of Federal Regulations (CFR) 219.10(f). The Forest Service has issued guidance for determining what constitutes a "significant amendment" under the National Forest Management Act. This guidance, in the Forest Service Handbook (FSH) 1909.12 – Chapter 5.32, identifies four factors to be used in determining whether a proposed change to the Forest Plan is significant or not significant. These four factors are: (1) timing, (2) location and size, (3) goals, objectives, and outputs, and (4) management prescriptions. The Alaska Region issued

1 Appendix

a Supplement to FSH 1909.12, Chapter 5.32, effective October 17, 1990 that includes an additional factor that can be considered in determining the significance of a Forest Plan Amendment. This additional factor deals with technical changes. An analysis of the factors is presented below.

Timing

The Forest Plan revision was completed in 1997. The old-growth habitat management prescription in the Forest Plan indicates the small and medium mapped reserves have received differing levels of field verification and integration of site-specific information in their design. During project level environmental analysis, for project areas that include, or are adjacent to, mapped old-growth habitat reserves, the size, spacing, and habitat composition of mapped reserves may be further evaluated.

Location and Size

The boundaries of the reserves in VCUs 615, 616, 617, 675, and 676 have been adjusted (see Figure A1-1). The sizes of the adjusted old-growth reserves are 1,825 acres in VCU 616, and 3,183 acres in VCUs 617, 675, and 676, of which 55 acres were classified in Forest Plan calculations as suitable and available for timber production. The small old-growth reserve in VCU 615 is only slightly adjusted for mapping errors. A complete analysis of the old-growth reserve boundary adjustments may be found in the Final EIS, Chapter 3.

Goals, Objectives, and Outputs

Goals

The Forest Plan goal for biodiversity is to maintain healthy forest ecosystems and maintain a mix of habitats at different spatial scales (i.e. site, watershed, island, province, and Forest) capable of supporting the full range of naturally occurring flora, fauna, and ecological processes native to Southeast Alaska. The adjustments to the small old-growth reserves are consistent with the goals of the Forest Plan.

Objectives

The Forest Plan objectives include: (1) to maintain a Forest-wide system of old-growth forest habitat (includes reserves, non-development land use designations (LUDs), and beach, estuary, and riparian corridors) to sustain old-growth associated species and resources and (2) to ensure that the reserve system meets the minimum size, spacing, and composition criteria described in Appendix K of the Forest Plan. The adjustments to these small and medium old-growth reserves were specifically designed to meet the Forest Plan objectives.

Outputs

Adjustments to the small and medium old-growth reserves in VCUs 614, 615, 616, 617, 675, and 676 will have only minor effects on Forest Plan outputs.

Management prescriptions

The small and medium old-growth reserves have been adjusted as noted in the Forest Plan and in accordance with the Old-Growth LUD management prescription. None of the standards and guidelines associated with the management prescriptions have been changed.

None of the standards and guidelines associated with the Management Prescriptions have been changed as a result of this amendment. The changes to the three mapped small Old-growth Habitat reserves apply only to this specific situation. These changes also would apply in future management, however this action does not preclude future modifications being made so long as the standards and guidelines for the management prescription are achieved. The proposed amendment fulfills the desired future condition for the Old-growth Habitat LUD Management Prescription as defined in the Forest Plan and would not significantly affect the goods and services produced.

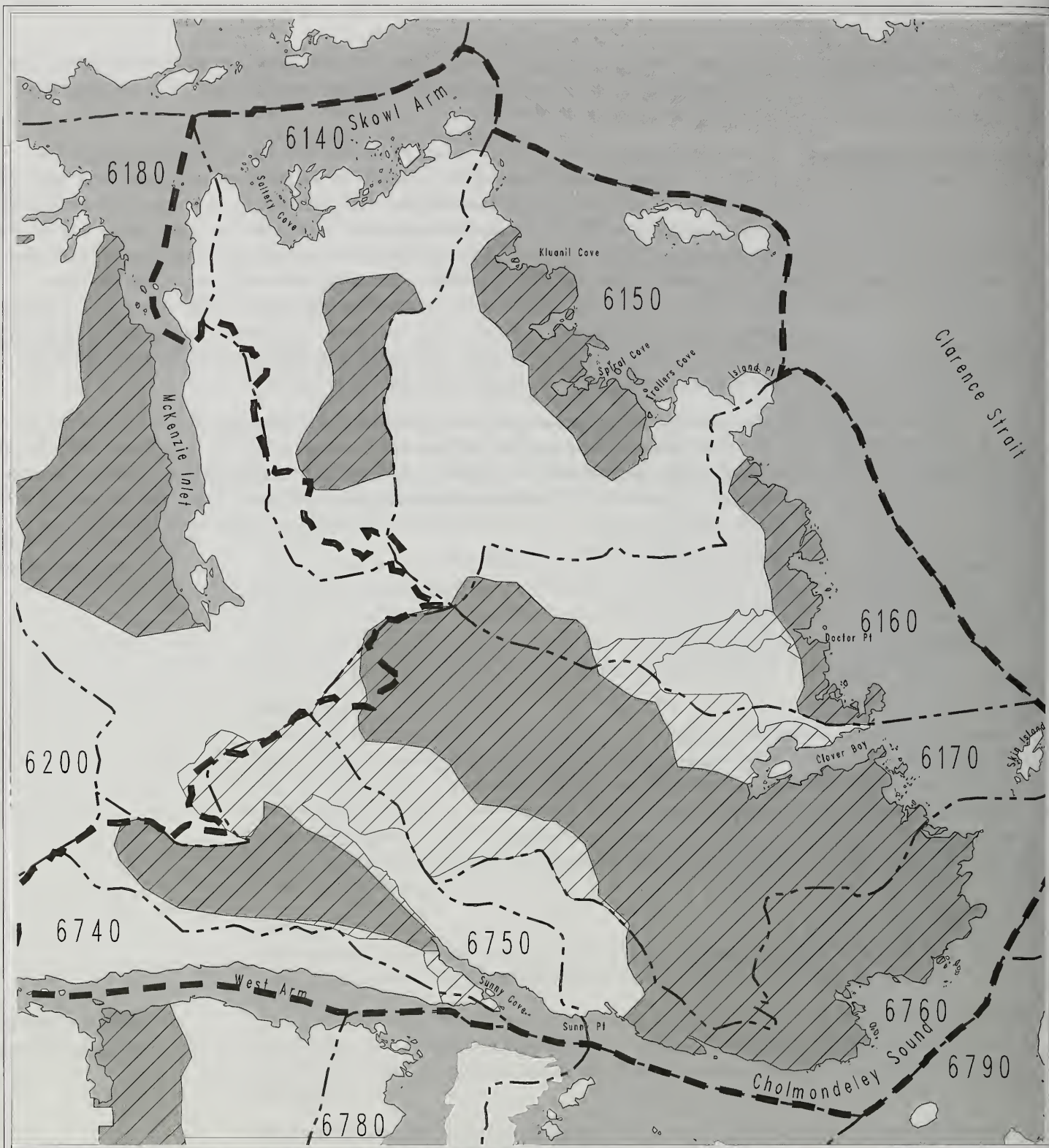
Technical Changes






Technical changes to a Plan's management direction may be made on the basis of new information about the actual resource characteristics of the area. This category does not apply to this case.

Cumulative Changes

The Cholmondeley Timber Sales is one of 16 National Environmental Policy Act (NEPA) decisions, as of March 2003, to make non-significant amendments to the Forest Plan by modifying LUD boundaries. The Niblack Environmental Assessment (EA) changed a Wild River non-development LUD to Old-Growth Habitat and Timber Management LUDs. The rest of the amendments involved enlargement or reduction of Old-Growth Habitat LUDs, usually exchanging acres with one of the resource development LUDs in order to more effectively meet Forest Plan objectives. Usually, wherever an Old-Growth Habitat LUD expanded, it caused a corresponding reduction of acres suitable for timber harvest. Likewise, and Old-Growth Habitat LUD size reduction usually meant an increase in suitable acres.

While the LUD changes within each project decision constituted non-significant Forest Plan amendments, Table A1-1 displays the accumulated effect on suitable acres for all projects. For each project, the table displays suitable acres that were changed from a non-development LUD to a resource development LUD, or from a development LUD to Old-Growth Habitat. The net change in suitable acres represents less than one percent of the suitable land base.



-  Saltwater
-  TLMP Old Growth Reserve
-  ROD Alternative Old Growth Reserves
-  VCU Boundary
-  Project Boundary

CHOLMONDELEY
ROD

Old Growth
Reserves

2 0.0 2 Miles

Figure A1-1

Table A1-1: Effects of Forest Plan Amendments on Acres Suitable for Timber Harvest as of May 2002

Project	Non-development to Development LUD	Development to Non-development LUD	Net Changes in Suitable Acres
Cholmondeley EIS	894	6,873	-5,979
Woodpecker EIS	180	130	+50
Salty EA	99	126	-27
Luck Lake EIS	257	794	-537
Polk Small Sales EA	0	153	-153
Doughnut	0	19	-19
Kuakan EIS	416	542	-126
Sea Level EIS	185	500	-315
Canal Hoya EIS	0	151	-151
Chasina EIS	0	78	-78
Control Lake EIS	446	142	+304
Crystal Creek EIS	481	1,153	-672
Nemo Loop EA	177	932	-755
Todahl Backline EA	2	363	-361
Fire Cove Salvage EA	186	633	-447
Niblack EA	252	0	+252
Total	3,575	12,589	-9,014

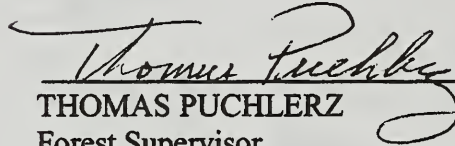
Source: 2000 Monitoring Report and GIS Analysis

1 Appendix

Conclusion

Based on a consideration of the factors above, I conclude adoption of this amendment is not significant in a National Forest Management Act context. This amendment is fully consistent with the current Forest Plan goals and objectives. The amendment provides added detail on implementation of the old-growth habitat management prescriptions of the Forest Plan.

I hereby amend the Forest Plan with this non-significant amendment by adjusting the Sunny Cove and Monie Lake reserves as shown on the Old Growth Reserves map and documented in the project planning record for the Cholmondeley Project Area Final EIS (see Figure A1-1).


THOMAS PUCHLERZ
Forest Supervisor

4/23/03
Date

Appendix 2

Unit Cards

Appendix 2

Unit Cards

APPENDIX 2

Cholmondeley Record of Decision #1

Harvest Design Unit Cards

The unit cards provide a summary of the information about the individual proposed harvest units, which are included in one or more alternatives. They portray the site-specific information such as additional mitigation, observations, and where further assistance will be needed during field layout.

The unit cards reflect the desirable condition of the final unit as developed through the interdisciplinary process. They also provide the reviewer with an opportunity to compare units.

Unit cards are used in concert with the silvicultural prescription to aid the field implementation personnel in obtaining the desired objectives as developed by the interdisciplinary team and selected in the Record of Decision.

Depictions of steep slope areas are derived from Geographic Information System (GIS) data. The soils section and soils report contain narratives explaining field-verified acre differences and suitability calls.

Resource data is divided into the following sections: Header Block with general information and list of mitigation measures, Stand Description, Transportation, Soil/Watershed, Fisheries, Wildlife, Geology, Lands, Cultural, Visuals, Recreation and the Prescription. The sections are described below with a list of appropriate definitions and other information to help define this technical information.

Unit Description

Each unit card has a header block that contains information describing the stand's size, location, and estimated volume of timber proposed for harvest, and lists mitigation measures (see Appendix D of the FEIS for in-depth descriptions). The header block includes the following:

- Unit number (VCU-UNIT#)
- Total Planned Acres
- Estimated Volume per Alternative (Vol.)
- Alternatives
- Aerial photo number (Photo YR/#)
- Elevation Range (Elev. Range)
- Aspect
- Logging System (see stand description for acronyms)
- Watershed #
- Name of Watershed
- Road #
- Windthrow Risk
- Mitigation Measures

Stand Description

The stand description block provides the following information regarding stand composition and physical characteristics as observed in the field and from stand data. It summarizes this information into stand-wide averages used for silvicultural options for prescriptions finalized later. Information includes:

- stand numbers to show where data originated from;
- net volumes from the Superstand program;
- a general listing of insect and disease problems with a general rating of severity;
- amount of downhill yarding expressed as a percentage of the unit;
- rating of potential windthrow risk;
- logging systems options (RS = running skyline, LS = live skyline, SL = slackline, SH = shovel, HE = helicopter);
- regeneration system options (cc = clearcut, GS = group selection, OSR = overstory removal) the number of stories refers to the number of overstory canopy levels that exist;
- range of site productivity (1 = high, 6 = low), and
- 50-year site index (height of trees at age 50).

Resource Considerations and Recommendations

Transportation Block

Information is shown on road cards (See Appendix 3).

Soils Block

Field observations were used to describe soils, slopes, and presence of wetlands within the featured unit and to derive the corresponding mitigation measures and best management practices (BMPs). No slopes with a mass movement index (MMI) rating of 4 or McGilvery soils were considered for timber harvest or road development. Plant associations, soil types, and GIS data regarding the extent of forested and nonforested wetland area within each unit are also included. Steep slope treatment and assistance during layout is also discussed. BMPs are referred to in Appendix C of the FEIS and further defined in the planning record.

Fish/Watershed Block

The fish/watershed input section lists all streams located within the featured unit and describes each stream by channel type and class number. Mitigation measures and BMPs are also included. Flagging colors listed denote stream protection measures to be taken. See definitions below.

Wildlife Block

The wildlife input section describes the structural needs for marten and goshawk habitat requirements. This section also lists acres of harvest areas and reserve areas that fall within high-value deer habitat. Other species needs are also discussed.

Geology and Minerals Block

Descriptions of karst vulnerability areas (if any), their locations, and corresponding mitigation measures are provided in this section. No harvest will occur within high karst vulnerability areas or karst features. See Appendix C of the FEIS for a discussion of project-specific mitigation measures.

Lands

The lands input section states whether the unit is located near or adjacent to state, private, or encumbered lands. If a unit is located near these areas, approximate distances are given. Mining claims are also discussed.

Heritage (Cultural) Resources

The heritage resources section states whether the unit is located within or adjacent to the high-sensitivity zone for cultural resources and survey results.

Recreation/Visual

The recreation and visual input section lists any existing recreation use in the vicinity of the units. VQO and ROS are defined below.

Silvicultural Block

Silvicultural systems have been developed to meet the management objectives based on the site and Forest Plan direction. These objectives include retaining stand legacy or old-growth characteristics to maintain biodiversity, economics, logging feasibility and protection of the soil, watershed, wildlife habitat, and scenery values of the proposed unit. Adjacent areas were taken into consideration when developing these objectives.

Silvicultural prescriptions will include these unit cards plus the sale layout and marking guidelines (in the prescriptions in the planning record) and will be completed for each of the timber harvest units. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency or for site conditions.

The use of prescriptions will help mitigate windthrow. Clearcuts are prescribed in high-windthrow areas where stand characteristics place the stand at high risk to windthrow. Where partial clear cuts are prescribed, they have been designed for windfirmness. Buffers have been designed to minimize the effects of windthrow based on windthrow risk analyses. Reserved trees will not be harvested from the closed roads until the regenerated stands are of commercial size due to this one-entry proposal.

Much of the unit card narration relates to a description of reserve tree placement needs and logging system options. Within each harvest unit, a portion of the area will be retained from timber harvest. Reasons for retention include areas that are classified as unsuitable due to high-vulnerability karst, MMI 4 soils, or riparian management areas (RMAs). These areas have been dropped from the units. Other retained areas include trees left under marten recommendations from the Tongass National Forest Land and Resource Management Plan Implementation Policy and Clarification (TPIT).

Specific Marten Standards and Guidelines apply in areas of high value marten habitat. Guidelines include leaving 10-20% of original stand structure, averaging 4 large trees/acre (20-30" diameter at breast height [dbh]), 3 snags/acre, and 3 large, downed trees/acre (20-30" dbh). The table below will be used in each unit prescription (see prescriptions in the planning record) for direction to pre-sale crews. More information on Marten Guides can be found in the Silvicultural Resource Report or in the Forest Plan.

Table A2-1: Example of Marten Guidelines Requirements Used In Unit Prescriptions

Deferral Requirements	Acres	Details
Marten habitat in entire unit	E	T
Total Marten habitat needed (10% of above)	X	A
Credit taken in:	A	B
Deferred ¹ Soils, Karst, WL, Uneconomical.	M	L
Addition to required buffers	P	E
Class III and IV buffers w/in unit	L	
Class I and II buffers protruding in unit	E	
Additional acres needed during layout		
# of live trees >20" (4/ac uniform or in clumps) Could be in other credits.		
# of snags >20" (3/ac uniform or in clumps) Could be in other credits.		
Leave >or = 10% of original structure	Y/N	

¹Dropped/deferred portions of original planned units are given an unsuitability call for reasons of: high MMI soils, steep soils, stream buffers, poor economics, low volume per acre, visual sensitivity, wildlife corridors, old-growth reserves or high vulnerability Karst features.

Criteria necessary for two-aged management will be applied to several units. Reserve trees will be left for this rotation creating a two-structured stand. 1) Retention to be left standing is approximately >15 percent of the volume or preferably >30 CCF (this is a minimum, it is anticipated there will be more volume left standing). Reserve trees are also left for other resource values: wildlife corridor needs, soil protection, or for marten habitat. 2). Distribution. Reserve trees left in clumps must be <2 tree heights apart and any trees left in an opening must be <1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not >100' apart. 3). Size of opening must be <2 tree heights in width. If individual tree distribution requirements cannot be achieved due to operational considerations, clumping of trees can be used to achieve the retention percentages.

Various forestry abbreviations are used in this section GT = greater than (>)-referring to trees of greater diameter in size, doms and codoms are trees dominant or co-dominant in the canopy, dbh is diameter of the tree at breast height, CF = Cubic foot, equivalent to a cube of wood with 1-foot sides. The cubic foot volume is a measure of the total sound wood in a tree and is a more accurate depiction of wood volume than the board foot measure. BA = the area of the cross section of a tree stem, or group of trees, measured at 4.5 feet above ground.

Mitigation Measures

Site-specific mitigation measures incorporated are listed in the header and under most resource sections. See Appendix C of the FEIS for a discussion of project-specific mitigation measures.

Helpful definitions

Aquatic Habitat Management Unit (AHMU)--A mapping unit that displays an identified value for aquatic resources. It is a mechanism for carrying out aquatic resource management policy.

Best Management Practice (BMP)--Practices used for the protection of water quality. BMPs are designed to prevent or reduce the amount of pollution from nonpoint sources or other adverse water

quality impacts while meeting other goals and objectives. BMPs are standards to be achieved, not detailed or site specific prescriptions or solutions. BMPs as defined in the USDA Forest Service Soil and Water Conservation Handbook are mandated for use in Region 10 under the Tongass Timber Reform Act. BMPs are referred to in Appendix C of the FEIS and further defined in the planning record.

Channel Type--A way of distinguishing parts of a stream system into segments that have consistent physical and biological characteristics. For descriptions, see "Channel Type Field Guide," Forest Service Publication R10-MB-6.

Crown Competition Factor (CCF) -- Crown Competition Factor reflects the area available to the average tree in a stand in relation to the maximum area it could use if it were open-grown. It is a unitless ratio based on the open-grown tree condition. A calculated stand CCF of 100 is an open-grown stand whose tree crowns fully occupy all available area. This stand density measure uses individual tree diameters and the relationship of crown radial width of the open grown tree-to-tree diameter. CCF is then used to determine whether you are practicing even-aged or two-aged management. A CCF of greater than 30 is one of three criteria required for two-aged management.

Estuary--For the purpose of this EIS process, estuary refers to the relatively flat, intertidal, and upland areas generally found at the heads of bays and mouths of streams. They are predominately mud and grass flats and are unforested except for scattered spruce or cottonwood. Estuary buffer is 1000 feet wide.

Flagging Colors-- Category A Streams: flagged blue/white (B/W). Maintain a minimum 100-foot TTRA buffer from the edge of the outer historic channel. Additional AHMU buffers and selective harvest buffers may apply. Category B Streams: flagged orange/white (O/W). Directionally fall and yard trees away from the stream or fully suspend trees over the stream. Leave non-commercial trees along the stream whenever possible. Additional AHMU buffers and selective harvest buffers may apply. Category C Streams: flagged green/white (G/W). Directionally fall trees away from the stream when possible. Trees can be felled to bridge the stream and partially suspended over the stream. Do not yard up or down the stream channel. Leave non-commercial trees along the stream whenever possible. Sometimes additional AHMU buffers and selective harvest buffers may apply.

Reasonable assurance of windfirmness (RAW) buffer--additional trees left along the edge of a buffer to block or deflect strong winds, thereby protecting trees within the buffer from windthrow. The RAW buffer can have a partial or no-cut prescription and is not considered a part of the RMA.

Recreation Opportunity Spectrum (ROS) A system for planning and managing recreation resources that categorizes recreation opportunities into seven classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use.

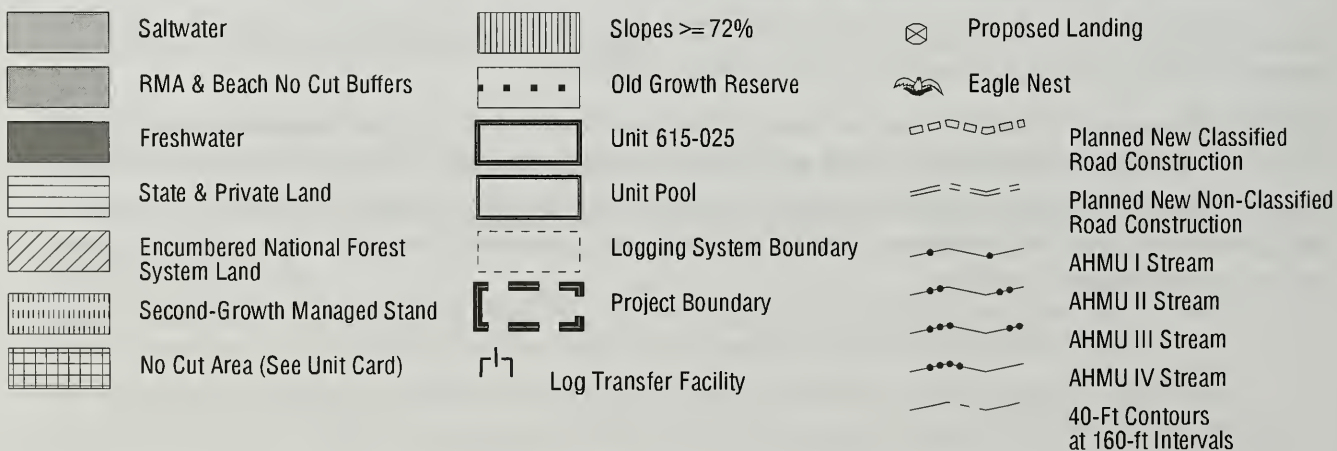
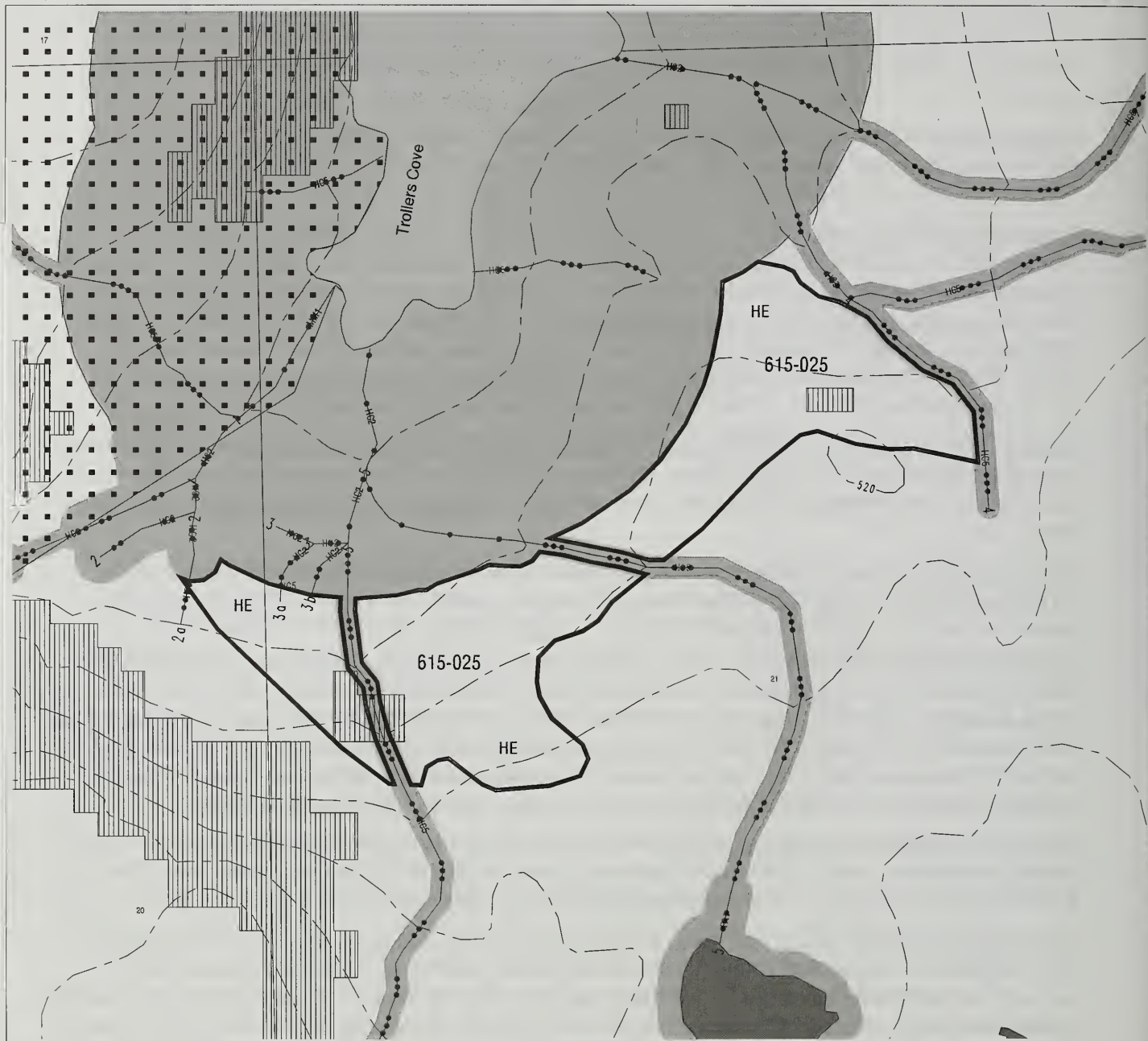
Stream Class--A means to categorize stream channels based on their fish production values. Also known as Aquatic Habitat Management Unit (AHMU) Class.

TTRA buffer--a no-cut buffer of no less than 100 feet required by the Tongass Timber Reform Act to be left on each side of all Class I streams and Class II streams which flow directly into Class I streams.

Visual Quality Objectives (VQO) measurable standards reflecting five different levels of landscape alteration based upon the degree to which the alteration repeats the form, line, color and texture and patterns of the natural landscape.



CHOLMONDELEY ROD Unit 615-025



660 0.0 660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 615-025 ACRES: 39 VOL: 1042 MBF ALTERNATIVES: 2, 3, 5, 6, 7

PHOTO YR/#: 91/490-59, 60 1/4 QUAD: ELEV. RANGE: 300-500 ASPECT: N LOGGING SYSTEMS: Helicopter

WATERSHED#: F35A/000Z NAME/CAT#: TROLLERS EAST/102-50-35 ROAD#: none WINDTHROW RISK: Moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, T1, W7, W28, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands= 64, 63, and 32, Superstand Net Volume/acre = 47,822

Downhill Yarding= 50%, Windthrow risk= moderate, Logging Systems Options= Running skyline.

Site Productivity= 4-2, Average Site Index (50yr) = 80-100. Very large trees. Existing windthrow.

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 30 to 80 percent gradient in the unit. There is approximately 1 acre of slopes over 72 percent gradient approved for yarding. Forested wetlands occur along the south, southeast boundary. Full suspension will be achieved via helicopter yarding. Full suspension is adequate to minimize landsliding and impacts to wetland resources (BMPs 12.5, 13.5 and 13.9). Six fish streams and three water quality streams have been identified in and around Unit 025. Most of the fish streams are in the estuary buffer. Riparian areas are small and indistinct in the unit (BMP 12.6). The estuary and stream buffers will include all the identifiable riparian areas. See fisheries section for specific stream course protection measures (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions of slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan and J. Hannon)

Stream# 1 Class I/III Flagging BW/OW C-type MM1/HC2 MM1 channel requires 120' buffer and HC2 requires 100' where Class I and the greater of slope break or 50' buffer where Class III.

Stream# 2 Class IIA Flagging BW C-type HC2 A 100' TTRA buffer is required.

Stream# 2A Class IIA/IV Flagging BW/GW C-type HC2 Class IIA portion requires 100' TTRA buffer.

Stream# 3 Class IIA Flagging BW C-type HC2 A 100' TTRA buffer is required.

Stream# 3A Class IIA/IV Flagging BW/GW C-type HC2 100' TTRA buffer on Class IIA, no buffer on Class IV.

Stream# 3B Class IIA Flagging BW C-type HC2 100' TTRA buffer.

Stream# 3C Class III Flagging OW C-type HC5 Slope break buffer required. Little incision at bottom, but higher up.

Stream# 4 Class III Flagging not flagged This stream is near the east unit boundary. It was only walked above unit but recommend keeping unit boundary above slope break.

Stream# 5 Class I/III Flagging OW C-type HC2/5 A 100' TTRA buffer is required on the Class I portion and a slope break buffer is required on the Class III portion.

BMPs 13.16, 12.6, 14.6

WILDLIFE: (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. This unit is a western hemlock/western red cedar/blueberry/salal plant association. Approximately 2.1-4.2 acres need to be retained in the southern portions of the unit to meet marten habitat requirements. This unit has been identified as a travel corridor for wildlife by other agencies and this issue should be addressed by the helicopter logging and the structure that will be left in the unit. This unit is adjacent to an estuary (tall sedge fen) buffer and an old growth reserve.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL: (T. Fifield) Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS: (J. Short)

The visual management objective for the Trollers Cove area is maximum modification. Due to the importance of this area for boaters, recreation cabin users, and fishers, recommend that the impact of this unit at the scenic focal point of this bay be lessened somewhat by retaining some of the forested texture within the unit. This will soften the distinct edges that would otherwise be highly evident in this relatively large volume stand of timber.

RECREATION: (J. Kluwe) Unit is located above Trollers Cove Cabin (FS Cabin). See visuals section for design comments related to the recreation setting.

PRESCRIPTION (G. Lawton): One entry proposal. Reserves for visual and marten mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged management Overstory Removal (OSR), cut all trees >21.0 inches DBH. Northern 1/2 will appear less impacted because of low number of trees >20". This treatment should remove ~ 63% of the BA and 20% of the trees/ac.: generally need to retain <15% of cutting unit overall, or <30 CCF where feasible and safe.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCUs where <33% of existing POG has been converted to young growth stands.

These apply only to the southern 1/2 of the unit They require 2.1-4.2 acres of structural retention for high value marten habitat credited in: the relatively uniform distribution of leave trees.

These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh).

The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities.

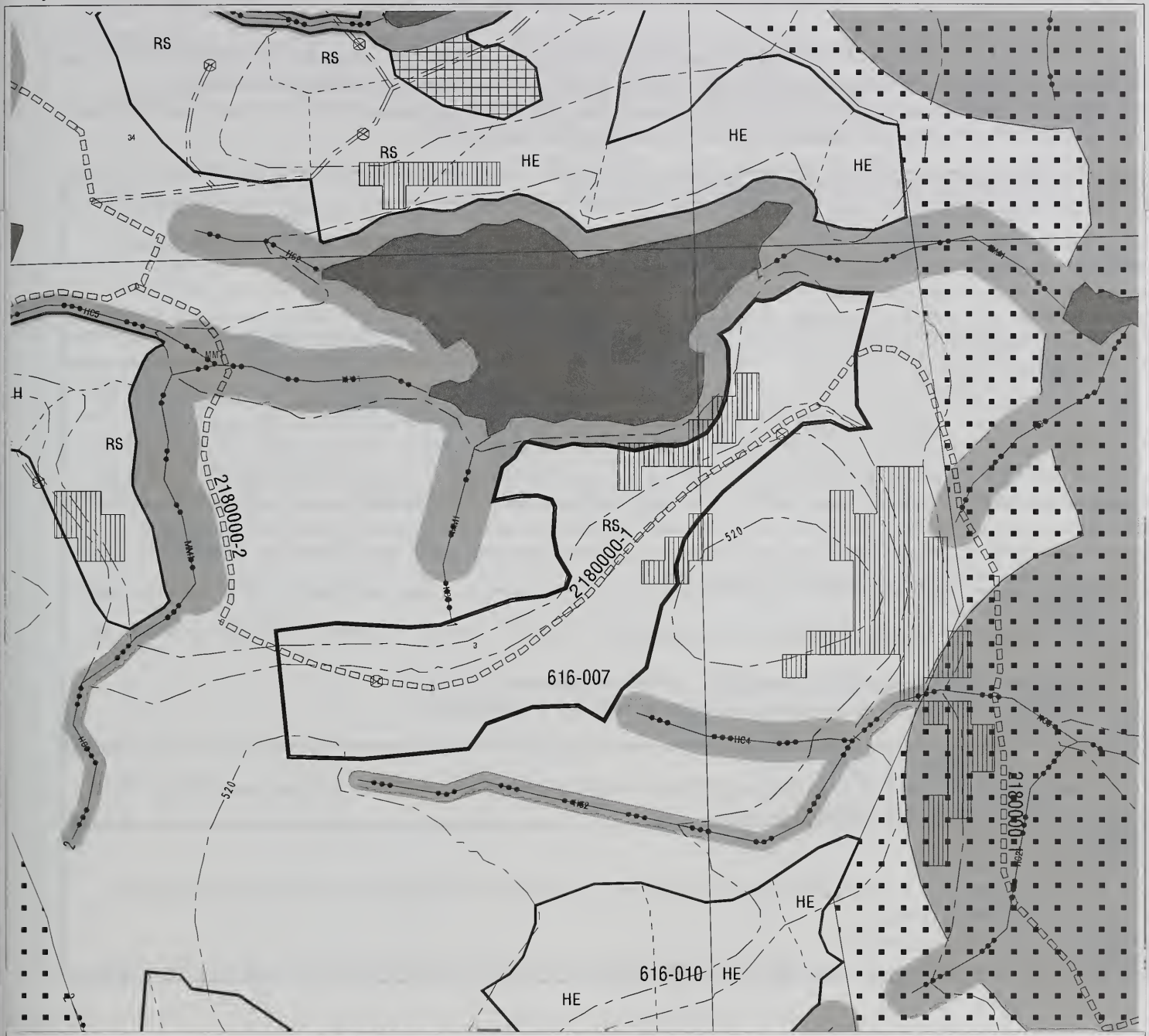
This works out to 84 live trees >20" dbh and 63 snags >20" dbh that need to be retained. These should be available in the leave areas mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave. Dropped road at Unit 616-024. Helicopter unit mainly for visuals structural retention and marten habitat retention on the southern 1/2 of the unit. South 1/2 of unit has big trees. Unit near to existing Old Growth Reserves (HCA). Future activities: none. Soils full suspension is required on the southern 1/2 of unit.

Adjacent to 1000' beach buffer.

To achieve partial retention VQO in the upper eastern portion of the unit, OSR and stream buffers screen the unit. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-007



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

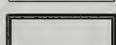
No Cut Area (See Unit Card)



Slopes $\geq 72\%$



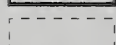
Old Growth Reserve



Unit 616-007



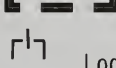
Unit Pool



Logging System Boundary



Project Boundary



Log Transfer Facility



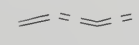
Proposed Landing



Eagle Nest



Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-007 ACRES: 33 VOL: 520 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR#: 91/490-75,74 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: NW LOGGING SYSTEMS: RS

WATERSHED#: DD5A/DD4A NAME/CAT#: South of Monie/102-50-27 ROAD#: 2180100 WINDTHROW RISK: Low
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, T4, W1, W4, W7, V1, V4.). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands= 10; Superstand Net Vol/ac= 20,444; Insects and Disease: Cedar dieback= high, Mistletoe= high; Downhill Yarding= 15%; Windthrow risk= low; Logging Systems Options= Running Skyline; Regeneration system options= Clearcut-type D1/2 and Group Selection1/2. Site Productivity= 4; Average Site Index (50yr)= 75. Low volume.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 40 to 75 percent gradient, with about 2 acres of slopes over 72 percent gradient in the unit identified as suitable. Landslide potential is moderate and high. About 40 percent of the unit is forested wetland. Partial suspension is required to minimize landslide potential and impacts to soil and wetland resources (BMPs 12.5, 13.5 and 13.9). The unnamed lake north of Unit 007 has a poorly defined lakeshore riparian area that will be entirely within the lake buffer (BMPs 12.6 and 12.6a). Two small streams with poorly defined riparian areas drain the unit. The riparian areas are entirely within the stream buffers. See fisheries section for specific stream course protection measures. (BMPs 12.6a and 13.16) Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan):

Stream# 1 Class I/A/IV Flagging BW/GW C-type MM1/HC5 Class I/A portion : 120' buffer. Class IV portion: no buffer
Stream# 2 Class I/A Flagging BW C-type MM1 Class I/A portion: 120' buffer.
Lake: Class I/A Leave a 100' no cut buffer and an additional 100' of partial cut.
BMP 12.6, 13.16

WILDLIFE: (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat within this unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): FS archaeologists surveyed this unit during the 1997 field season. No cultural resources were noted. No further concerns.

VISUALS (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located in the lake basin south of Monie Lake. Recreation use in the area is light.

PRESCRIPTION: (G Lawton) Reserves for fisheries buffer on lake.

SILVICULTURAL SYSTEM FOR THE ROD: Two-aged management, clearcut with reserves tending toward a two-aged structured stand with leave strips (eastern 1/2). And the western 1/2 is even-aged management clearcut w/reserves, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Criteria necessary for two-aged management. Reserve trees left in perpetuity creating a two-structured stand.

1) Retention to be left standing is >15 percent of the volume or preferably >30 CCF. Reserve trees are left for other resource values: wildlife corridor needs, soil protection, or for the marten habitat.

2). Distribution. Reserve trees left in clumps must be <2 tree heights apart and any trees left in an opening must be <1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not >100' apart.

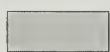
3). Size of opening. The opening must be <2 tree heights in width. Linear openings of slightly less are acceptable. Use clearcut, on western 1/2 of unit. Clear-cuts would provide clumps of reserve trees in islands or fingers within the unit. This type can be implemented where rock outcrops, cliffs, or blind leads make harvesting uneconomical or infeasible. In addition, clumps of reserve trees can be left in other areas if helicopter or cable yarding with lateral yarding capability is the logging system to be employed. Clear-cut can be prescribed by itself or in combination with one of the other types. No high volume strata or marten habitat exists in unit.

Soils partial suspension is required on the steep eastern edge of the unit. Low windthrow risk, shorter trees, road is high for uphill yarding all contribute to two-aged options. Eastern half of unit can use alternating cut/leave corridors perpendicular to the road, as long as criteria for two-aged management above are met. Corridors of 100' width with 100' spacing between corridors. This 100' partial cut lake buffer occurs above the 100' no cut lake buffer. RS logging system is anticipated on entire unit. Yarding system difficulties due to: corridors planned and suspension required.

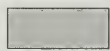
Keep roads high and out of wetlands. Deleted acres due to uneconomic scrub. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Unit adjacent to existing Old Growth Reserves (HCA). 0 marten acres habitat in harvest unit. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-008



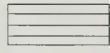
Saltwater



RMA & Beach No Cut Buffers



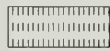
Freshwater



State & Private Land



Encumbered National Forest System Land



Second-Growth Managed Stand



No Cut Area (See Unit Card)



Slopes $\geq 72\%$



Old Growth Reserve



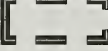
Unit 616-008



Unit Pool



Logging System Boundary



Project Boundary



Log Transfer Facility



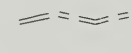
Proposed Landing



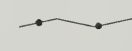
Eagle Nest



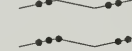
Planned New Classified Road Construction



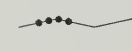
Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream

40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-008 ACRES: 36 VOL: 504 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR/#: 91/490-75,74 1/4 QUAD: ELEV. RANGE: 300-400 ASPECT: N LOGGING SYSTEMS: RS, SH

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-28 ROAD#: 2180200 WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, T4, W1, W4, W7, W34, V1, V4,). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/ TIMBER (G. Lawton)

Exam Stands= 20; Superstand Net Vol/ac= 16,416; Insects and Disease= Cedar Dieback= high; Rot= high; Downhill Yarding= 25%; Windthrow risk= medium to low; Logging System Options= Running Skyline, Helicopter, and Shovel; Regeneration System Options= Clearcut-type B and CORR; Site Productivity= 3; Average Site Index (50yr)= 80. 0 marten habitat acres.

TRANSPORTATION - SEE ROAD CARDS FOR ROADS LISTED ABOVE (Jack Oien)

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 60 percent gradient with about 1 acre of slopes over 72 percent in Unit 008 identified as suitable. The steep slopes occur around a rock outcrop. Most of the unit classifies as forested wetland. Partial suspension is required to minimize landsliding and impacts to the steeper slopes soils and wetlands (BMP 12.5, 13.5 and 13.9). The lake west of Unit 008 has a narrow lakeshore riparian area that will be entirely included in the lake buffer (BMP 12.6 and 12.6a). See fisheries section for stream course and lake protection measures. (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan):

Stream# 1 Class IIA/III Flagging: BW/OW C-type MM1/HC5 Class IIA portion: 120' no cut buffer. Class III portion: Slope break buffer.

Stream# 2 Class IIA, III Flagging BW C-type MM1/HC6 Class IIA portion: 120' no cut buffer. Class III portion not walked following unit expansion--plan for slopebreak buffer.

Stream# 3 Class IV Flagging GW C-type HC5 Class IV portion: No buffer

Stream# 4 Class IV Flagging GW C-type HC5 Class IV portion: No buffer .

Stream# 5 Class IIA/IV Flagging BW/GW C-type HC1/HC5 Class IIA portion: 100' buffer. Class IV portion: No buffer.

Lake# 1 This lake borders the west portion of the unit. It is a Class IIA lake. This lake requires a 100' no cut and an additional 150' partial cut buffer.

WILDLIFE (M. Dillman): Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. The unit is poor goshawk habitat. Unit is a western hemlock/western red cedar/blueberry plant association with skunk cabbage and western hemlock/western red cedar/salal plant association. There is no high value marten habitat located in this unit.

GEOLOGY/MINERALS:

LANDS: No concerns

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J Short): No concerns.

RECREATION (J Kluwe): Unit is located in the lake basin south of Monie Lake. Recreation use in the area is light.

PRESCRIPTION (G Lawton): (partial cut buffer along stream and lake).

SILVICULTURAL SYSTEM FOR THE ROD: Two-aged management clear-cut with reserves tending toward two-aged management meet spacing requirements of two-aged mgmt on this approximately 6 acres. Criteria necessary for two-aged management. Reserve trees left in perpetuity creating a two-structured stand.

1) Retention to be left standing is >15 percent of the volume or preferably >30 CCF. Reserve trees are left for other resource values: lake partial cut buffer for fish and wildlife protection.

2). Distribution. Reserve trees left in clumps must be <2 tree heights apart and any trees left in an opening must be <1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not >100' apart.

3). Size of opening. The opening must be <2 tree heights in width. Linear openings of slightly less are acceptable. Lake buffer of 100' no cut, and 150' feet partial cut required.

Rest of unit, 17 acres is even-aged with reserves, cut leaving unmerchantable stems retained in 50 to 100 feet of the border for the remainder of the unit. Leave phenotypically superior seed trees along boundary as seed source. No high volume strata exist in unit. RS logging system(s) is anticipated on most, (shovel may be used on several level places in the center). Move planned road location into the unit to avoid several crossings. Drop small piece across southwest stream. Deleted acres due to uneconomic scrub. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Partial suspension required for soil protection. Stay out of sensitive plants to the north. Future entry is possible to recover reserve trees. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-010



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

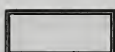
No Cut Area (See Unit Card)



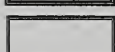
Slopes $\geq 72\%$



Old Growth Reserve



Unit 616-010



Unit Pool



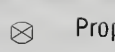
Logging System Boundary



Project Boundary



Log Transfer Facility



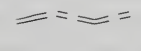
Proposed Landing



Eagle Nest



Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream

40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-010 ACRES: 22 VOL: 396 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR/#: 91/490-75,76 1/4 QUAD: ELEV. RANGE: 350-500 ASPECT: SE LOGGING SYSTEMS: HE
WATERSHED#: F40A NAME/CAT#: CLOVER LODGE ROAD#: WINDTHROW RISK: Mod-High
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F18, F21, T4, W1, W7, W34, V1, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands= 12; Superstand Net Vol/ac=19,861; Insect and Disease: Cedar dieback-high, Mistletoe-high, Rot- high. Downhill Yarding= 25%; Windthrow risk- high; Logging Systems options- Running Skyline; Regeneration System Options- Clearcut-type A; Site Productivity- 4; Average Site Index (50yr)- 80. 0 marten habitat acres.

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 60 percent gradient. Landslide potential is moderate and high. Nearly the entire unit classifies as forested wetlands. Use partial suspension to minimize landslides and impacts to soil and wetland resources (BMPs 12.5, 13.5 and 13.9). A Class II stream adjacent to the southwest corner of the unit has a small, weakly defined riparian area that will be entirely within the buffer (BMP 12.6 and 12.6a). The stream is seasonally used as a domestic water supply by Clover Bay Lodge. Buffer small unmapped tributary stream in 616-010. Modify unit to either drop the setting isolated by this stream or helicopter log the setting upslope of the stream. See Appendix B of Floodplains, Soils, and Wetlands Resource Report for the Cholmondeley Project Area. See fisheries section for specific stream course protection measures (BMP 12.6a and 13.16).

FISHERIES (J. Hannon):

Unit not field reviewed by fisheries. GIS shows Class IIA HC1 and MC1 channels along the south side of the unit. Plan for 100' TTRA buffers and review streams during layout. The stream flows into the north side of Clover Bay near the Clover Bay Lodge tie up location. The stream is used as a domestic water source when the lodge is tied up in Clover Bay. Maintain the 100' buffer to protect water quality. Provide a buffer to protect water quality in any new streams discovered in the unit.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a western hemlock/western red cedar with salal plant association. Very steep slopes in places (125%) with large rock outcrops. Bald eagle came to goshawk call. Lots of snags in unit. There is no high value marten habitat in this unit. Retain 2.2 to 4.4 acres of cutting unit. This unit is near an old growth reserve.

GEOLOGY/MINERALS

LANDS: No concerns

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J Short): No concerns. Only portion of backline visible from south shore of Clover Bay.

RECREATION (J Kluwe): Unit is located above Clover Bay.

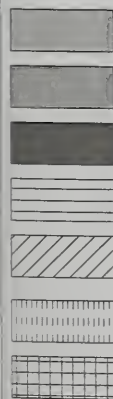
PRESCRIPTION (G Lawton):

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit overall, or <30CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Clear-cut leaves safe snags and non-merchantable reserve trees within a 50 to 100 foot border along harvest unit edges and non-merchantable trees near internal setting boundaries if safety is assured. In this case, trees are directionally felled toward the landing and carefully yarded out of the buffer. Uneconomical for any other type of regeneration system. No high volume strata exist in unit. Soils partial suspension is required on the NW corner. NW corner may require SL. Yarding system difficulties due to: downhill yarding with suspension. High mistletoe infection rate, much rot and windthrow history along with uneconomic options all point toward CC regeneration method. Future activities: regeneration surveys. Unit near to 1,000' beach/estuary buffer. Unit adjacent to old growth reserves.

PROTECT POTENTIAL DOMESTIC WATER STREAM #1. See Fisheries section. Additional mitigation for activities upstream of domestic water users include (F20): increased buffers mentioned above; fuel storage, refueling and maintenance will occur outside watershed; timing of road construction to avoid extremely wet periods; capping off water intakes during construction; rock pit development outside of watershed; sediment traps; consideration of bridges versus culverts; prevent contamination from oil spills; and potential written agreements. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-011



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

No Cut Area (See Unit Card)



Slopes $\geq 72\%$



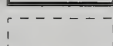
Old Growth Reserve



Unit 616-011



Unit Pool



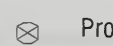
Logging System Boundary



Project Boundary



Log Transfer Facility



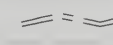
Proposed Landing



Eagle Nest



Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-011 ACRES: 78 VOL: 2180 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR/#: 91/490-75,74 1/4 QUAD: ELEV. RANGE: 200-400 ASPECT: ALL LOGGING SYSTEMS: RS,HE,SL

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-28 ROAD#: 2180210, 2180215 WINDTHROW RISK: Moderate
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F15, F18, F21, T1, T4, W1, W7, W28, W34, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 10 and 23; Superstand Net Vol/ac.- 31,939; Insects and Disease: Cedar dieback-high and Mistletoe-high;

Downhill Yarding= 50%; Windthrow risk= high; Logging System Options- Helicopter and Running Skyline; Regeneration Systems Options- Clearcut-type D 1/2, and Overstory Removal; Site Productivity- 4; Average Site Index (50yr)= 75.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 10 to 90 percent gradient in Unit 011 with approximately 3 acres of slopes over 72 percent gradient identified as suitable. Slopes greater than 72 percent gradient and cliffs up to 30 feet high are located in the southeast part of the unit. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Unit 011 includes about 2 acres of forested wetlands just south of the pond mid-unit. Use a combination of partial and full suspension to minimize impacts to soil and wetland resources (BMP 12.5, 13.5 and 13.9). Full suspension is required around the cliff. The lake just south of Unit 011 has a narrow lakeshore riparian area that will be entirely within the lake buffer (BMP 12.6 and 12.6a). See fisheries section for specific lake and pond protection requirements (BMPs 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan):

Lake#1: on southern unit boundary. Class II lake with cutthroat, Dolly Varden, and sticklebacks. 100' no cut and an additional 100' of partial cut buffer.

Lake#2: small lake/pond in center of unit 30m X 100m. No fish found. Lake buffered for wildlife purposes.

Stream# 1 Class III Flagging OW C-type HC5 Slopebreak buffer recommended, drains from pond into Monie Lake.

Stream# 2 Class IIA Flagging BW C-type MM1 120 ' no cut buffer.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.

Numerous snags in the unit. There are rock outcrops in the unit. Unit is a western hemlock/western red cedar/salal plant association. An area of muskeg has been deleted on the southeast corner of the lake. Waterfowl nesting and use of the area has been documented and as a result wildlife recommends a 100-foot no cut buffer on the lake in the middle of the unit. 2.4 acres of high value marten habitat retention are required in the western 1/3 of this unit.

GEOLOGY/MINERALS

LANDS: No concerns

CULTURAL (T. Fifield): FS archaeologists surveyed this unit during the 1997 field season. No cultural resources were noted. No further concerns

VISUALS (J Short): No concerns.

RECREATION (J Kluwe): Unit is located in the lake basin south of Monie Lake. Present unit design would appear as obvious alterations to the landscape to the casual observer in the Monie Lake Basin. Recreation use in the area is light.

PRESCRIPTION: Reserves for fisheries and marten mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Combination of even-aged clear-cut with reserves on the north, and Overstory Removal w/>24" dbh (cut >or = 24" dbh) at the south end of the unit: retain <15% of cutting unit overall, or <30CCF, where feasible and safe.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCUs where <33% of existing POG has been converted to young growth stands. These apply only to the western 1/3 of the unit. They require 2.4 acres of structural retention for high value marten habitat credited in: 1 acre in stream buffers. Additional acres will have to be achieved through retention. The leave area that is mapped to the south of the lake is not high value marten habitat. A no cut buffer could be left between the western road and the small northern lake. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. The needs calculate out to 180 live trees >20" dbh and 135 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available, additional trees will have to be marked or clumped to leave.

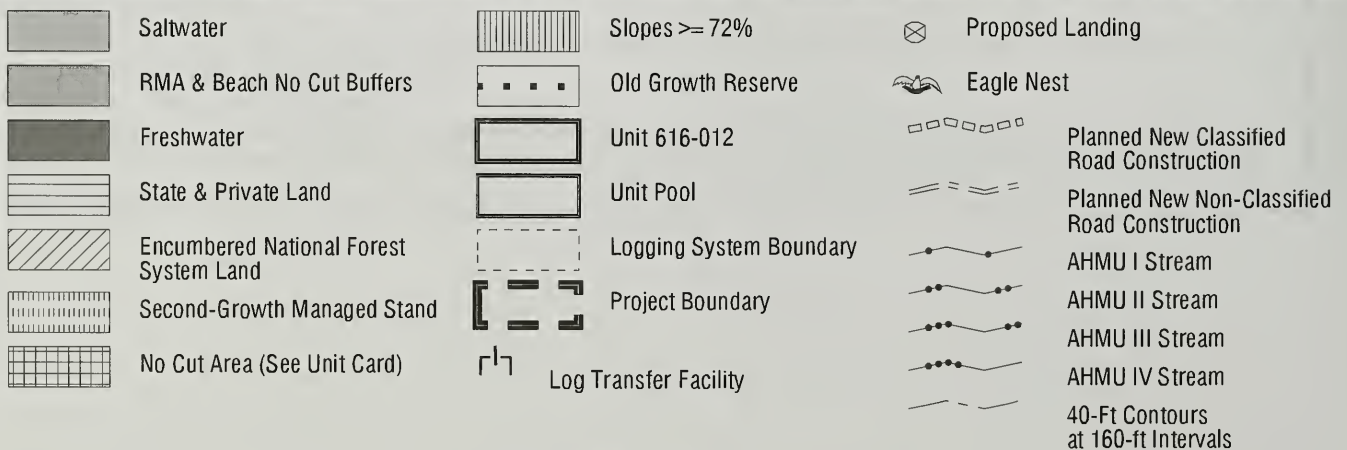
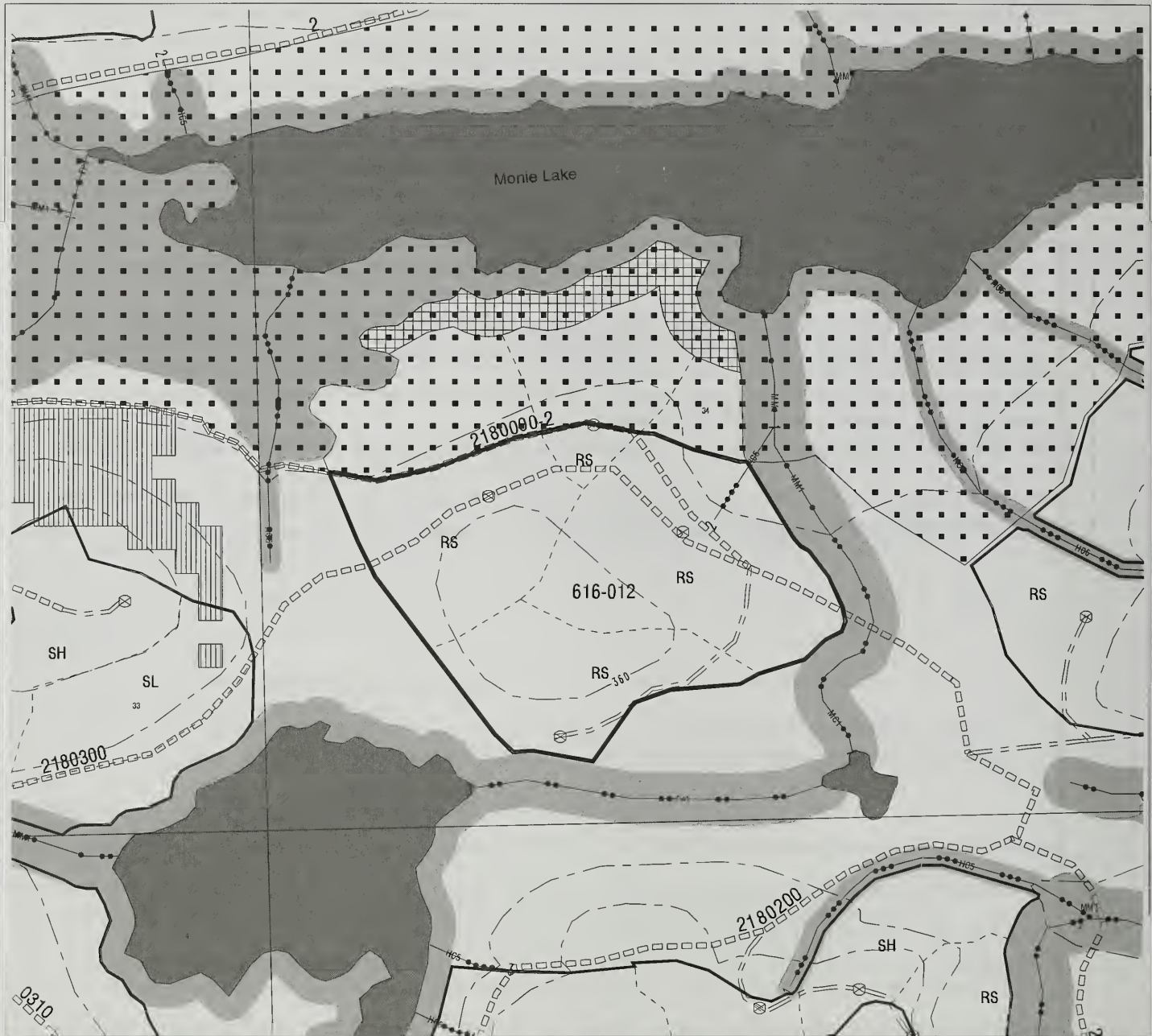
Due to steepness and lake buffer needs at the southern lake, an OSR w/24" dbh limit (cut everything above 24.0") is prescribed in the 200' partial-cut buffer above the 100' lake no-cut buffer. Use helicopter on the suspension area and everything east of this. The road will not be built low across the unit (paralleling the lake). 75% of the volume will be removed in this area (15 Ac). Maintain setting width between units. Adjacent to existing old growth reserve. See BMPs listed above.

ROD ADDITIONS: Northern boundary is moved south to provide a minimum of 600' no-cut buffer (OGR) to the lake.

Due to one-entry proposal the OSR section of the unit, retained trees (<24" dbh) will not be harvested until the northern portion of the unit is ready for a commercial entry.



CHOLMONDELEY ROD Unit 616-012



660 0.0 660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-012 ACRES: 58 VOL: 1662 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR/#: 91/490-75,74 1/4 QUAD: ELEV. RANGE: 200-400 ASPECT: E LOGGING SYSTEMS: RS

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180000-2, 2180300 WINDTHROW RISK: High
 The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F6, F11, F18, F21, T4, W4, W7, W28, W31, W34, and V4). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 22 and 23; Superstand Net Vol/ac.- 33,527; Insects and Disease: Cedar dieback-high, Mistletoe- high, and Rot-high; Downhill Yarding - 20%; Windthrow risk-high; Logging systems Options-Running Skyline and - helicopter;
 Regeneration System Options-Clearcut-type B and Corridor-; Site Productivity-4; Average Site Index (50yr)-80.
 Existing WT.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr): Slopes in Unit 012 range from 20 to 50 percent gradient. The east half of the unit is mostly forested wetland. Use partial suspension to minimize impacts to soil and wetland resources (BMP 12.5 and 13.9). The lakeshore riparian area on Monie Lake below the unit is narrow and entirely within the lake buffer. The stream east of the unit has an identifiable riparian area below the slope-break. The riparian area will be entirely within the stream buffer. The stream south of the unit has a short sedge fen riparian area. The unit boundary was modified following reconnaissance to avoid the riparian associated wetland fens north and south of the unit. The riparian area will be entirely within the buffer (BMPs 12.5, 12.6, 12.6a and 13.16). See fisheries section for specific stream course protection requirements.

FISHERIES (S. Farzan):

Monie Lake: Class I lake--leave a 250' no cut buffer along the lakeshore.

Stream# 1 Class I/II/A Flagging BW C-type MMI/MCI/PA 200' buffer up to cascade falls (top of anadromous) then 120' buffer along MCI and PAI. Nothing for windfirmness because unit is on downwind side of stream.

Stream# 2 Class IV Flagging GW C-type HC5 No buffer is required on this stream.

Lake# 2: on southern unit boundary. Class II lake with cutthroat, Dolly Varden, and sticklebacks. 100' no cut buffer and an additional 50' of partial cut buffer.

Lake# 2 southwest of unit. Requires a 100' no cut and 50' of partial cut buffer.

The road crossing will require timing for sockeye and coho (June 15-August 15) and possibly passage depending on final location.

BMPs 12.6,13.16,14.6

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a western hemlock/western red cedar/blueberry/skunk cabbage plant association. Several sensitive plant species as well as other uncommon plant species were found in the medium-tall sedge dominated small bog wetland area located just to the southeast of the unit. The unit boundary has been moved to mitigate these plant populations. A population of *Senecio moresbiensis* was documented in this area. Other species found in this wetland include *Platanthera chorisiana*, *Botrychium multifidum*, *Lycopus uniflorus* as well as other aquatic and uncommon plant species. The retention area for marten must be located in the southern 2/3 of the unit (4.5 to 9.0 acres).

GEOLOGY/MINERALS: -- LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located in the lake basin south of Monie Lake. Present unit design would appear as obvious alterations to the landscape to the casual observer in the Monie Lake Basin. Recreation use in the area is light.

PRESCRIPTION (G. Lawton)

SILVICULTURAL SYSTEM FOR THE ROD: Two-aged clearcut with reserves where feasible and safe.

Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Criteria necessary for two-aged management: Reserve trees left in perpetuity creating a two-structured stand.

1) Retention to be left standing is >15 percent of the volume or preferably >30 CCF. Reserve trees are left for other resource values: wildlife corridor needs, soil protection, or for the marten habitat.

2). Distribution. Reserve trees left in clumps must be <2 tree heights apart and any trees left in an opening must be <1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not >100' apart.

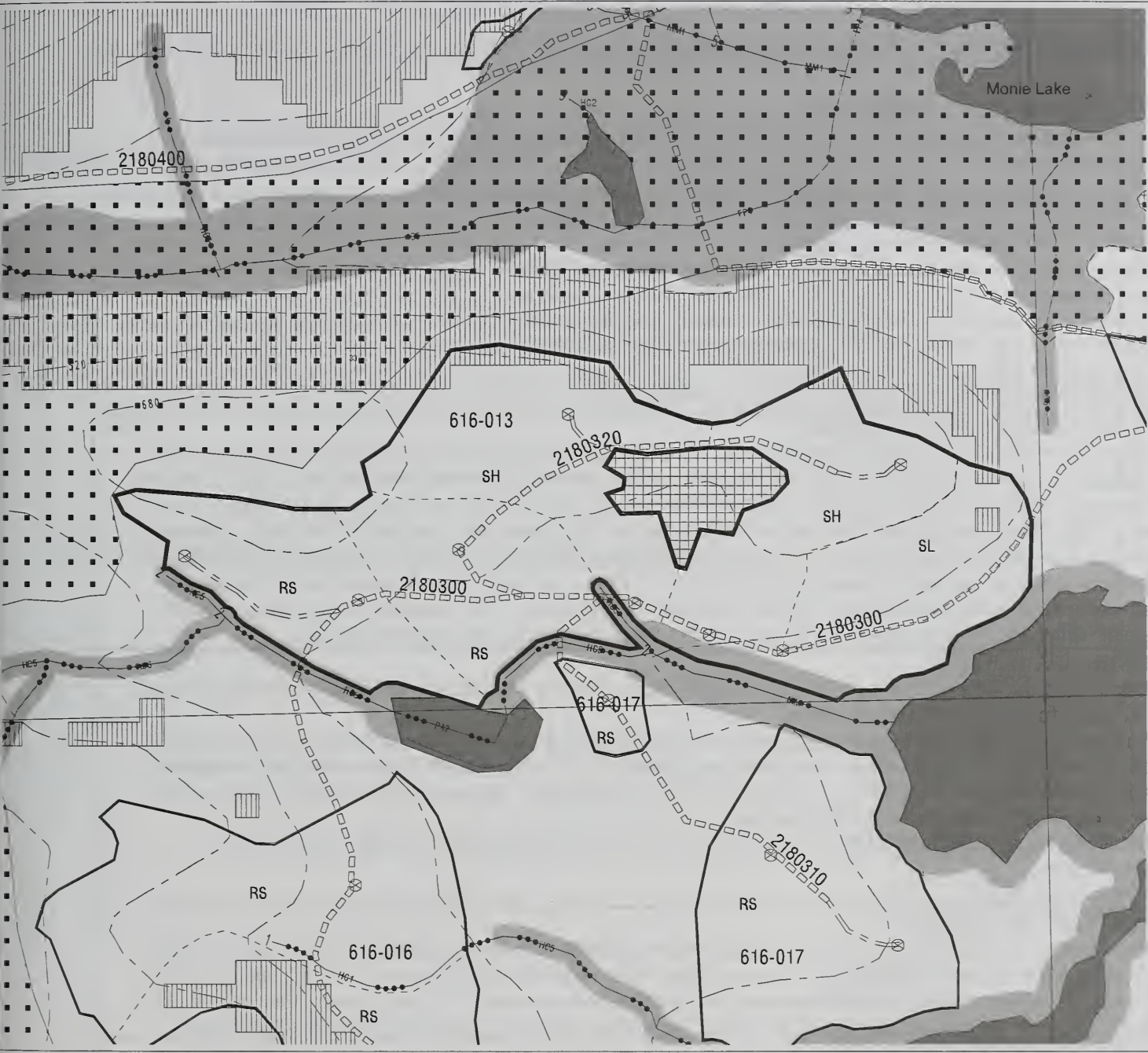
3). Size of opening. The opening must be <2 tree heights in width. Linear openings of slightly less are acceptable. Marten habitat described in Forest Plan requires 4.5 to 9.0 acres of structural retention for high value marten habitat in the southern 2/3rds of the unit. Structural acreage credit can be achieved through additional buffers above the minimum standards on the Class I/II stream on the east side of the unit. The leave area mapped along the northern boundary of this unit is not high value marten habitat. Presale will need to layout an additional 1.5-5.0 acres of retention using blindleads, trees left in split-yarding areas, feathering of the backline (will help mitigate visual concerns), seed trees retained, wildlife islands where logging safety can be maintained. Clumps contain a minimum of 30% canopy closure. This could be achieved with a ~ 5 acre clump on the center knob (least yarding impact). No-cut buffers along streams, lakes and marten habitat retention mitigates wildlife's request for structure retention. Maintain setting width between adjacent units.

Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This calculates out to 180 live trees >20"dbh and 135 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional individual trees will have to be marked or clumped to leave.

Deleted acres (Sedge Fen) NW and NE of unit. Protect sensitive plants to the SE of unit. Move southernmost spur upslope to avoid sensitive plants to the south. Future activities: regeneration surveys, yellow cedar planting, survival survey, seed collection, and pre-commercial thin at 20-25 yrs. Partial suspension required for soil protection. Unit close to Old Growth Reserve. No RAW needed due to terrain. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-013



	Saltwater		Slopes $\geq 72\%$		Proposed Landing
	RMA & Beach No Cut Buffers		Old Growth Reserve		Eagle Nest
	Freshwater		Unit 616-013		Planned New Classified Road Construction
	State & Private Land		Unit Pool		Planned New Non-Classified Road Construction
	Encumbered National Forest System Land		Logging System Boundary		AHMU I Stream
	Second-Growth Managed Stand		Project Boundary		AHMU II Stream
	No Cut Area (See Unit Card)		Log Transfer Facility		AHMU III Stream
					AHMU IV Stream
					40-Ft Contours at 160-ft Intervals

6600.0660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-013 ACRES: 69 VOL: 1240 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR/#: '91/490-75,74 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: ALL LOGGING SYSTEMS: SH, LS, SL

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180300, 2180310, 2180320, 2180330

WINDTHROW RISK: MODERATE

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F15, F18, F21, T4, W1, W4, W7, W34, V1, V4). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
SILVICULTURE/TIMBER (G. Lawton) Exam Stands- 49; Superstand Net Vol/ac= 23,513; Insects and Disease: Cedar Dieback- high, Mistletoe- high and Rot-high; Downhill Yarding- 25%; Windthrow risk- medium; Logging systems Options- Live Skyline and Shovel; Regeneration System Options- Clearcut-type B and Corridor; Site Productivity- 4; Average Site Index (50yr)- 80.0 marten ac.
TRANSPORTATION (Jack Oien) SEE ROAD CARDS
SOILS/WATERSHED (D. Landwehr) Slopes range from 30 to 75 percent gradient in Unit 013 with an estimated 2 acres of slopes over 72 percent gradient identified as suitable. Landslide potential is moderate and high. Most of the unit classifies as forested wetlands. Use partial suspension to minimize impacts to the steep soils and wetland resources (BMPs 12.5, 13.5 and 13.9). There is a narrow lakeshore and stream riparian area on the lake southeast of Unit 013. A larger tall and short sedge fen riparian area occurs adjacent to the pond southwest of the unit. All riparian areas will be entirely within the stream and pond buffers (BMP 12.6, 12.6a and 13.16). See fisheries section for specific stream and lake protection measures (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.
FISHERIES (S. Farzan) Lake# <u>1</u> , on the eastern border of the unit. Class <u>II</u> supports Dolly Varden and cutthroat. A 100' no cut buffer and an additional 150' partial cut buffer. Stream# <u>2</u> Class <u>IIA, III</u> Flagging <u>BW, OW</u> C-type <u>MM1/HC5/PA2</u> A 120' no cut buffer with an additional 50' of partial cut for windfirmness along the Class II portion. The Class III HC5 portion requires a slopebreak buffer with additional trees left for windfirmness. The Class III PA2 channel type area requires a 50' no cut buffer with additional trees for windfirmness. Stream# <u>3</u> Class <u>III</u> Flagging <u>OW</u> C-type <u>HC5</u> A no cut slope break buffer with additional trees for windfirmness. BMPs 12.6, 13.16
WILDLIFE (M. Dillman) Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Abundant old and new beaver sign seen around lakes, a dam was present at the east end of the lake. . Unit is a western hemlock/western red cedar/blueberry/salal plant association with. No high value marten habitat exists within the unit boundary. A palustrine area along the southern boundary has been protected with a buffer.
GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): FS archaeologist surveyed this unit during the 1997 field season. No cultural resources were noted. No further concerns. VISUALS (J. Short): No concerns RECREATION (J. Kluwe): Unit is located in the lake basin south of Monie Lake. Recreation use in the area is light.

PRESCRIPTION (G. Lawton) Reserves planned for wildlife corridor and fisheries needs

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves, small acreage of two-aged clear-cut with reserves (cut/leave corridors). Even-aged (65 acres) retain $\leq 15\%$ of cutting unit overall, or $< 30\text{CCF}$, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut which calls for leaving safe snags and non-merchantable reserve trees within a 50 to 100 foot border along harvest unit edges and non-merchantable trees near internal setting boundaries if safety is assured. In this case, trees are directionally felled toward the landing and carefully yarded out of the buffer.

4 acres of two-aged management. Fingers of leave will consist of alternating cut/leave corridors. Use RS in this partial cut lake buffer below the planned road (takes 50% of the volume on 4 acres). Criteria necessary for two-aged management. Reserve trees left in perpetuity creating a two-structured stand.

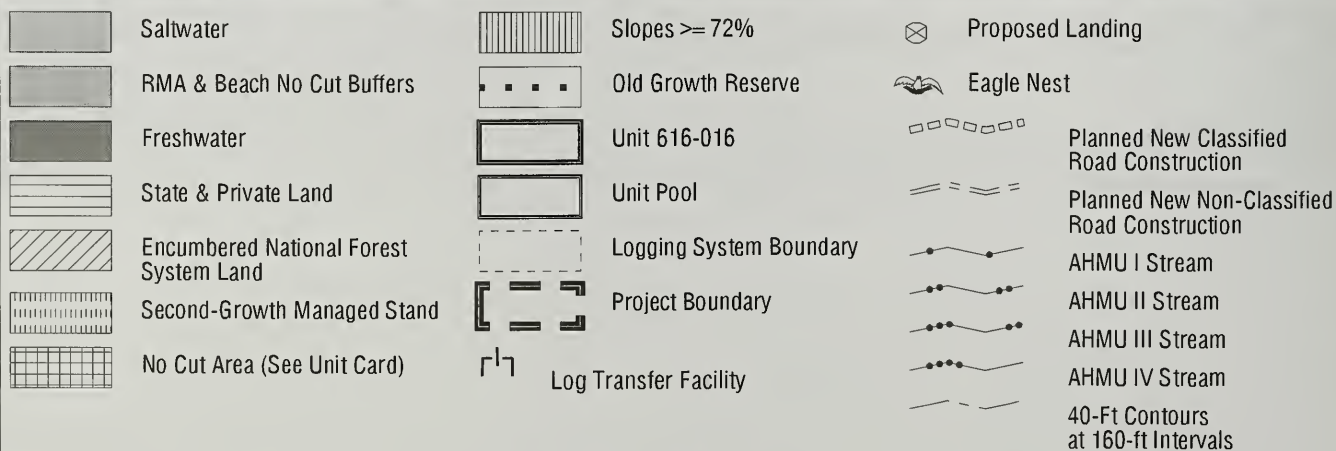
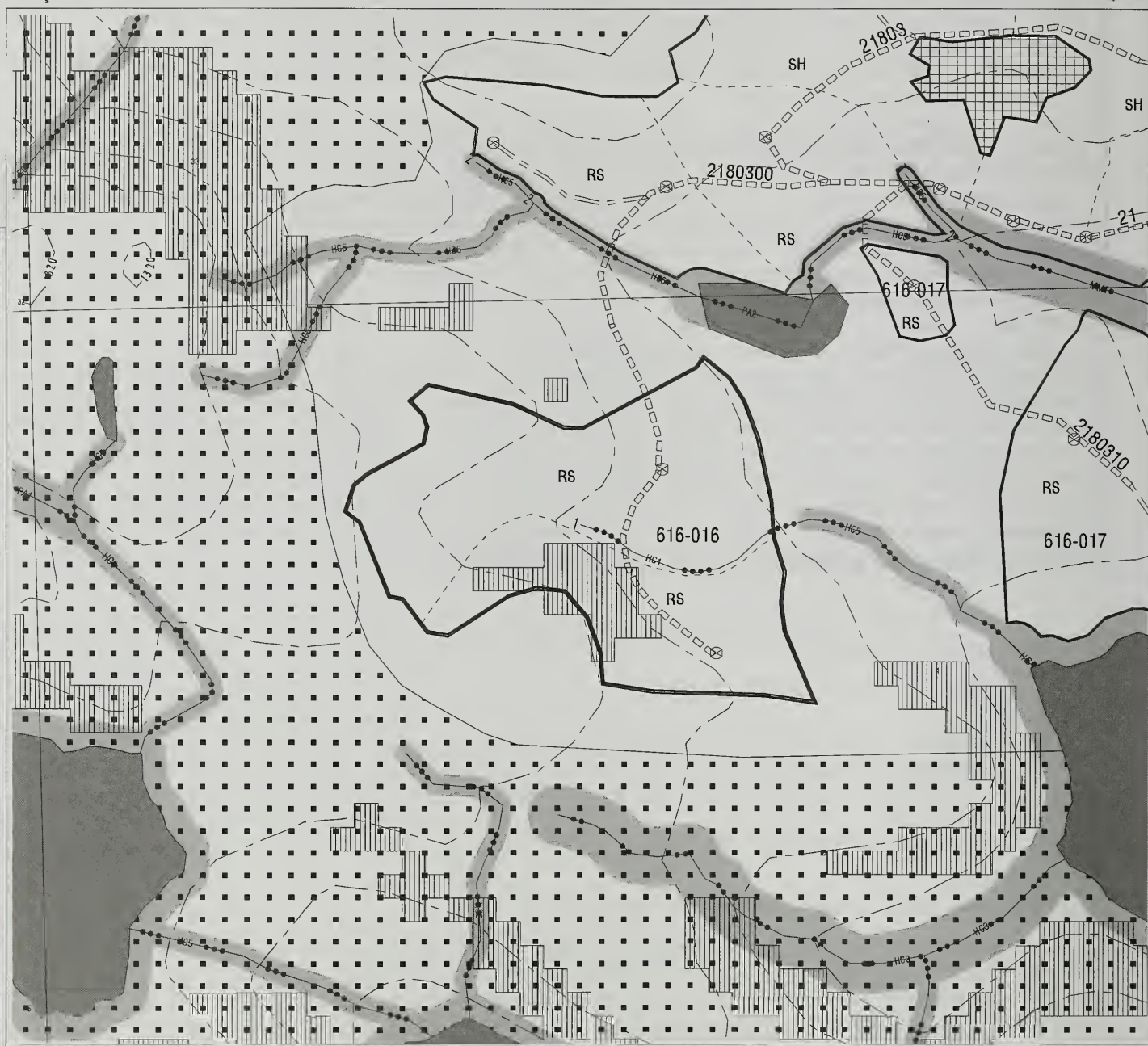
1) Retention to be left standing is > 15 percent of the volume or preferably $> 30\text{CCF}$. Reserve trees are left for other resource values: wildlife corridor needs, soil protection, or for the marten habitat.

2) Distribution. Reserve trees left in clumps must be < 2 tree heights apart and any trees left in an opening must be < 1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not $> 100'$ apart.

3) Size of opening. The opening must be < 2 tree heights in width. Linear openings of slightly less are acceptable. Soils partial suspension is required on the steep SE face. No high volume strata exist in unit. Non-merchantable pole areas could be retained especially in shovel yarding areas. Yarding system difficulties due to: steep areas and scrub intermixed and group selection partial cut buffers, stream buffers, partial cut buffers and possible pole retention. Maintain setting width between adjacent units. Retain stand structure for wildlife where feasible. Use of a slackline machine and equipment on the lower road for lift could help achieve deflection for suspension in the steep SE corner. Deleted acres due to uneconomic scrub. Future activities: regeneration survey, harvest evaluation on non-clearcut portion, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 20-25 yrs. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-016



660 0.0 660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-016 ACRES: 36 VOL: 648 MBF ALTERNATIVES: 2,4,5,6

PHOTO YR#: 91/490-56,57 1/4 QUAD: ELEV. RANGE: 600-1000 ASPECT: E LOGGING SYSTEMS: RS

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180300, 2180340 WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, T4, W1, W7, W34, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 49; Superstand Net Vol/ac= 21,519; Insects and Disease: yellow cedar decline in small amounts; Downhill Yarding- 80%; Windthrow risk- Low; Logging systems Options- Running Skyline; Regeneration System Options- partial cut option available due to low windthrow risk; Site Productivity- 4;

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 80 percent gradient with about 3 acres of slopes over 72 percent in the unit identified as suitable. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Cliffs form part of the upper unit boundary. Landslide potential is moderate and high. Forested wetlands occur on about 6 acres in the eastern-most part of the unit and along the lower unit boundary. Use a minimum of partial suspension to minimize impact to soil and wetland resources and to protect the Class IV stream in the unit. (BMP 12.5 and 13.5 and 13.9). Locate the upper unit boundary below the cliffs and rock outcrops while still providing the necessary suspension (BMP 13.2). A tall and short sedge fen riparian area is located adjacent to the pond northeast of the unit. The entire riparian area is outside the unit. (BMPs 12.6 and 12.6a). See fisheries section for stream course protection measures (BMPs 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan):

Stream# 1 Class IIA/III/IV Flagging: BW/OW/GW C-type HC1 Class IIA portion: A 100' no cut buffer. Class III portion: A slope break buffer with an additional 50' of partial cut for windfirmness. Class IV portion: No buffer required.
BMPs 12.6,13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a mixed conifer/blueberry/deer cabbage plant association. No high value marten habitat within unit boundary. A palustrine area is outside of the unit to the northeast see Unit 616-013. There is no high value marten habitat in this unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns

RECREATION (J. Kluwe): Unit is located in the lake basin south of Monie Lake. Recreation use in the area is light.

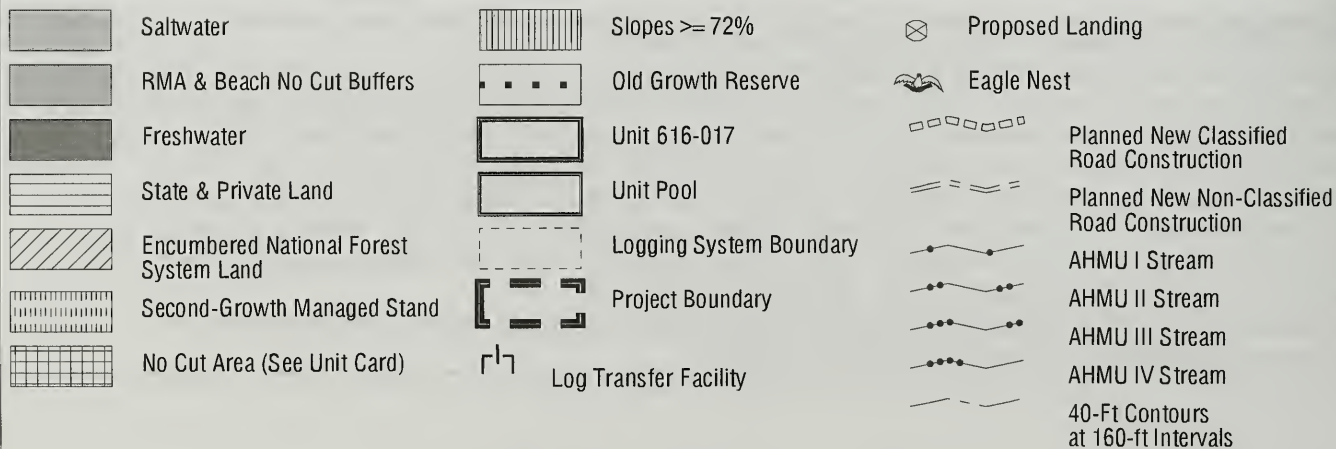
PRESCRIPTION (G. Lawton): Reserves planned for wildlife needs.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% or <30 CCF of the stand, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut which calls for a specified number of snags and live (8-10 trees/acre) replacements with >16" diameter limit retained in 50 to 100 feet of the border. Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is call for. Leave cedar seed trees where possible. Soils partial suspension is required on all of unit. No high volume strata or marten habitat exists in unit. Shovel logging system is anticipated only where soil scientist concurs (wetland plant association). Generally small diameter trees. Minimize road building.

Deleted acres-N/A. Future activities: regeneration surveys, plant redcedar seed collection survival survey, precommercial thinning at 25+ yrs. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-017



660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-017 ACRES: 24 VOL: 228 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/490-75,74 1/4 QUAD: ELEV. RANGE: 300-400 ASPECT: E LOGGING SYSTEMS: SH, RS

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180310 WINDTHROW RISK: Low
The following mitigation measures were either taken during unit design or they will be applied during project
implementations: (M1, M2, F1, F11, F18, F21, T4, W6, W7, W28, W34, and V6). These measures are described below
within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 49; Superstand Net Vol/ac= 19,614; Insects and Disease: Cedar Dieback- high, and Rot- high;
Downhill Yarding- 0%; Windthrow risk- low; Logging systems Options- Live Skyline and Shovel; Regeneration
System Options- Clearcut-type B and Corridor, Patch cuts; Site Productivity- 4; Average Site Index (50yr)- 80;
Variable std of clumpy high volume trees with poles spaced in between.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS

SOILS/WATERSHED (D. Landwehr):

Slopes in unit 017 range from 20 to 60 percent gradient. Landslide potential is moderate and high. Most of the unit
classifies as forested wetland. Use partial suspension to minimize impacts to soil and wetland resources (BMPs 12.5
and 13.9). The lakeshore riparian area is narrow and will be entirely included in the lake buffer (BMP 12.6 and
12.6a). See fisheries section for stream course protection measures (BMP 12.6a and 13.16).

FISHERIES (S. Farzan):

Lake# 1, eastern boundary of the unit. Class IIA supporting fish. A 100' no-cut buffer and an additional 150'
partial-cut buffer.

Stream# 1 Class IIA/III Flagging: BW/OW C-type HC1/HC5 Class IIA portion: A 100' no-cut buffer.

Class III portion: Slope-break no-cut buffer.

Stream# 2 Class IIA/III Flagging BW/OW C-type MM1 Class IIA portion: A 120' no-cut buffer.

Class III portion: 50' no-cut buffer.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density.
Large rock cliffs along the west side of the lower lake. Unit is poor goshawk habitat. Unit is a western
hemlock/Alaska yellow cedar with salal plant association. There is no high value marten habitat within the unit
boundary.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T Fifield): FS archaeologists surveyed this unit during the 1997 field season. No cultural resources
were noted. No further concerns.

VISUALS (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located in the lake basin south of Monie Lake. Recreation use in the area is
light. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce
impacts to recreation activities in the area.

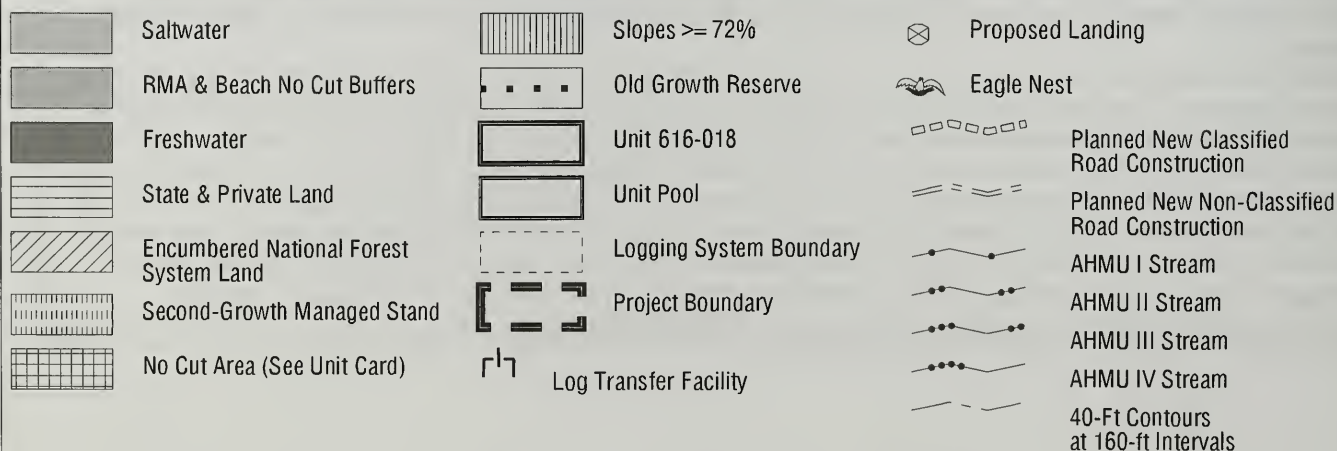
PRESCRIPTION: (G. Lawton)

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged management. Due to one-entry proposal, original
uneven-aged is changed to even-aged management system. Low volume clumps will be left for wildlife structure
purposes.

Soils partial suspension is required on the steep NE and flat wet area in the west. Shovel yarding will require soil
scientist input due to wet soils. No high volume strata exist in unit. Maintain setting width between adjacent units.
Retain stand structure for wildlife where feasible. Fish is requesting 100' no cut buffer, and 150' partial cut buffer
along the lakes. Unit is flat on top with short steep slope pitches near lake buffer. The volume is very clumpy with
clumps of high volume patches separated by pole-sized trees. Could be mostly yarded with a shovel on the flats and
possibly reach over the edges to retrieve high volume trees. Partial cut areas near lake buffer could be designed as
cut and leave strips and possibly reached by shovel from the top. Future activities: regeneration surveys, harvest
evaluation on non-clearcut portion, yellow and redcedar planting, seed collection, survival survey, and pre-
commercial thin at 25+ yrs. Cuts address RAW needs. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-018



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-018 ACRES: 30 VOL: 395.2 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR#: 91/490-74 1/4 QUAD: ELEV. RANGE: 100-200 ASPECT: SW LOGGING SYSTEMS: RS,SH

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180500, 218010 WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F18, F21, W1, W7, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 51; Superstand Net Vol/ac= 12,666; Insects and Disease: some Cedar Dieback; Downhill Yarding- N/A; Windthrow risk- low; Logging systems Options- Running Skyline and Shovel; Regeneration System Options- ATC, CC; Site Productivity- 4; Average Site Index (50yr)- 80.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 20 to 50 percent gradient in Unit 018. Unit 018 was modified following reconnaissance to avoid wetlands, cliffs, and streams (BMPs 12.5 and 13.2). Nearly the entire unit classifies as forested wetland. Use partial suspension to minimize impacts to wetlands (BMP 12.5 and 13.9). Landslide potential is moderate. There is a narrow to non-existent lakeshore riparian area on the lake north of the unit. The entire riparian area will be within the buffer (BMP 12.6, 12.6a and 13.16). See fisheries section for stream course protection measures (BMPs 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards. See the soils report for details.

FISHERIES (S. Farzan):

Monie Lake: south of unit, 250' buffer, unit is over 300' away
Lake north of Monie Lake (northeast side of unit): Class IIA lake, recommend 150' buffer, cutthroat and Dolly Varden present in watershed.
Stream# 1 Class IV Flagging GW C-type HC5 top of stream flagged at 180' elevation, no buffer.
BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a western hemlock/western red cedar/blueberry/salal/skunk cabbage plant association. The population is located in a small wetland inclusion. It is recommended that during unit layout the small wetland area be excluded and counted towards the 5% retention of the unit. The unit has no high value marten habitat. This unit is next to an old growth reserve.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns.

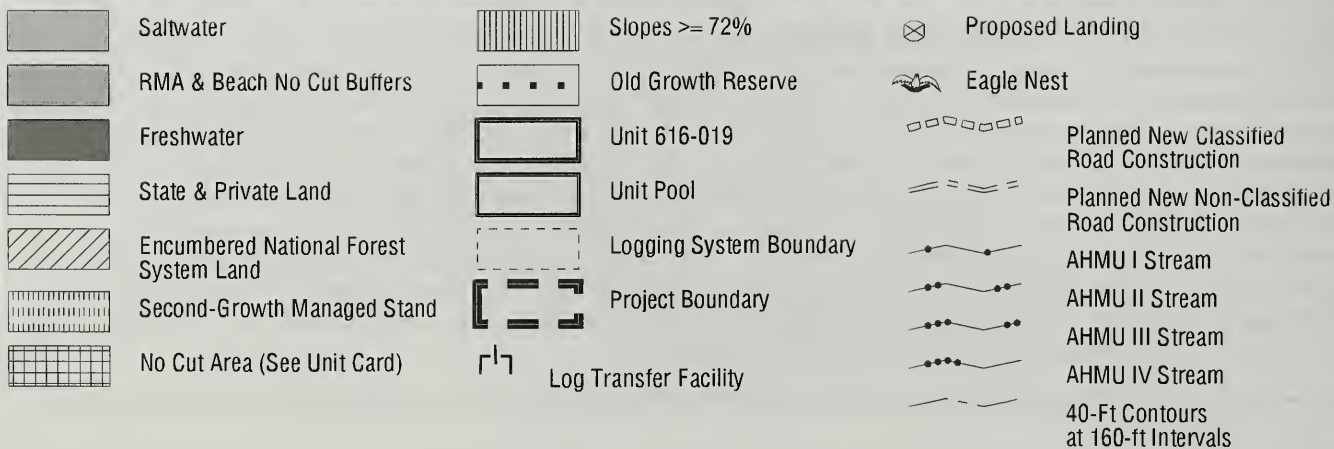
RECREATION (J. Kluwe): Unit is located in the lake basin north of Monie Lake. Present unit design would appear as obvious alterations to the landscape to the casual observer in the Monie Lake Basin. Recreation use in the area is light.

PRESCRIPTION (G. Lawton):

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves; retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut that leaves safe snags and non-merchantable reserve trees within a 50 to 100 foot border along harvest unit edges and non-merchantable trees near internal setting boundaries if safety is assured. In this case, trees are directionally felled toward the landing and carefully yarded out of the buffer. No high volume strata exist in unit. Very low volume and small diameter trees, which may prove to be uneconomical upon further investigation during layout. Need soil scientist input for shovel yarding on the forested wetland soils if proposed in the layout process. Feather upper boundary edge for mitigating visual impacts. Deleted acres due to uneconomic scrub. Future activities: regeneration surveys, plant red cedar, seed collection, survival survey, and PCT at 25 yrs. Partial suspension required for soil protection. Unit adjacent to Old Growth Reserves (HCA). No martin habitat in unit. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-019



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-019 ACRES: 17 VOL: 142.5 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/490-74 1/4 QUAD: ELEV. RANGE: 200-300 ASPECT: SE LOGGING SYSTEMS: RS,HEL

WATERSHED#: F33A NAME/CAT#: MONIE/102-50-27 ROAD#: 2180000-3, 2180600 WINDTHROW RISK: High

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F15, F18, F21, W1, W7, W34, V1, and V4). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 34 and 52; Superstand Net Vol/ac= 7,768; Insects and Disease: N/A; Downhill Yarding- 75%; Windthrow risk- medium to high; Logging systems Options- Running Skyline, Slackline/helicopter; Regeneration System Options- CC-B, CORR downhill; Site Productivity- 5; Average Site Index (50yr)-60.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 20 to 90 percent gradient with an estimated 1 acre of suitable ground for logging contained within an area of slopes over 72 percent in Unit 019 identified as suitable. Any yarding occurring on slopes >72% would require full suspension. Unit 019 was modified following reconnaissance to avoid cliffs, unstable terrain and low volume areas (BMPs 13.2, 13.5, and 12.5). There is an existing landslide in the south end of the unit. Forested wetlands occupy about 10 acres of the unit. Deep-well-drained-colluvial soils occur at the base of the cliff that splits the unit. Use a minimum of partial suspension on slopes less than 72 percent gradient to minimize impacts to soil and wetland resources (BMP 12.5 and 13.9). There is a slope-break riparian area on the water quality stream southeast of the unit. The riparian area will be entirely within the buffer (BMP 12.6, 12.6a and 13.16). See fisheries section for stream course protection measures. An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards. See the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES: (J. Hannon)

Stream# 1 Class III Flagging OW C-type HC6 Slopebreak buffer required and recommend an additional 50' partial cut buffer for windfirmness of the stream buffer. Stream flows into Monie Lake. Northeast side of unit not checked by fisheries. Timing for sockeye and coho will be needed for road crossing on Stream #1. BMPs 12.6, 13.16, 14.6

WILDLIFE (M. Dillman):

Wildlife did not visit this unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. High value marten habitat needs to be retained <1 acre, along the northern edge of the portion of the unit, which extends to the east. Credit can be taken for the area that is deleted for soils concerns.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns.

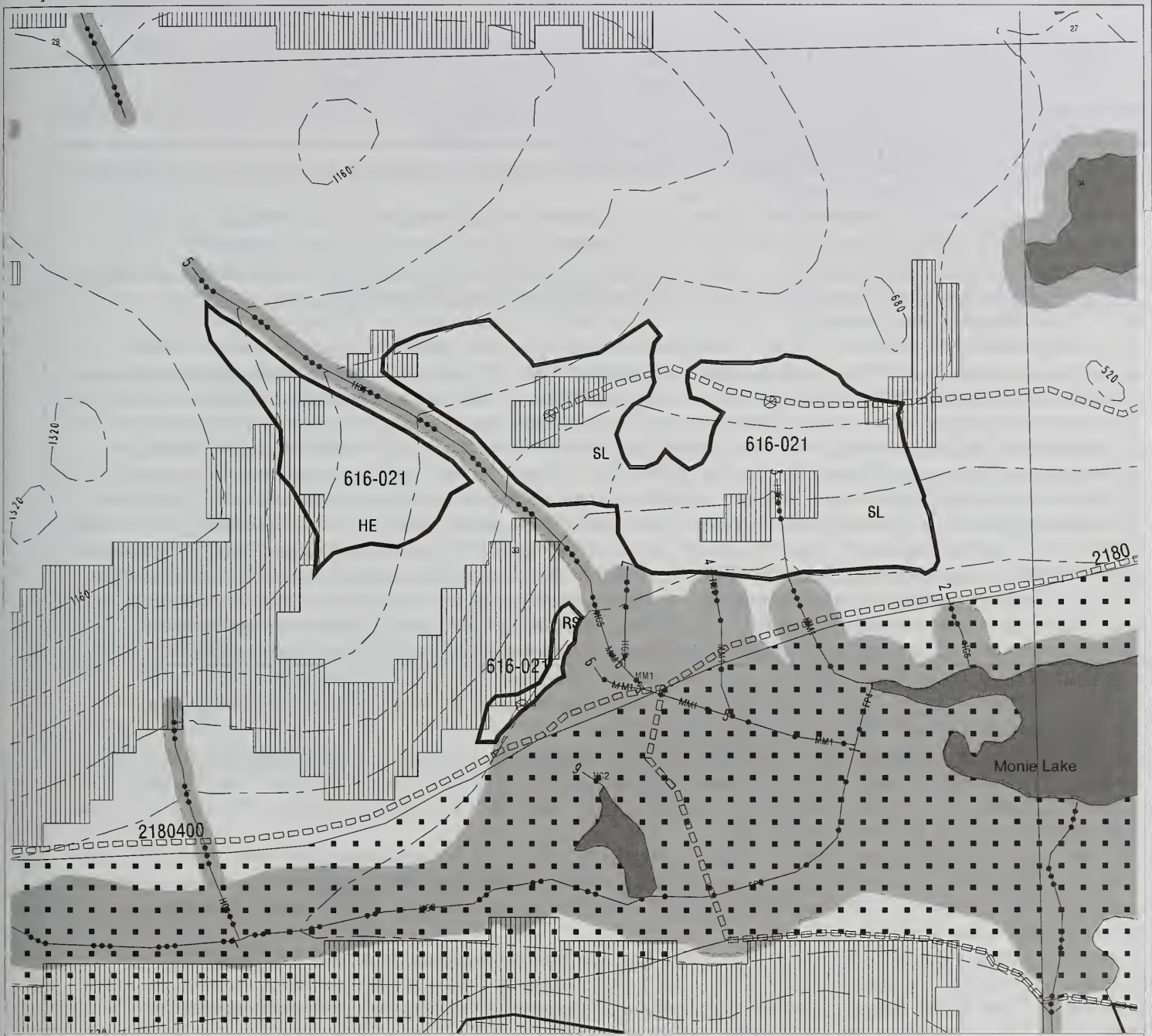
RECREATION (J. Kluwe): Unit is located in the lake basin northwest of Monie Lake. Present unit design would appear as obvious alterations to the landscape to the casual observer in the Monie Lake Basin. Recreation use in the area is light.

PRESCRIPTION (G. Lawton): Single entry too uneconomical to harvest reserves. Reserves for marten, soils and visual mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut which calls for a specified number of snags and live (8-10 trees/AC) replacements with >20" diameter limits retained in 50 to 100 feet of the border. Due to the flexibility of the interior setting boundaries, live reserve trees for interior settings may only be required wherever a stream buffer is required. Retain seed trees on boundary where possible and use stream buffer as 5% retention. Soils full suspension is required on the oversteepened areas. Requires 0.4-1 acres of structural retention for high value marten habitat. A small portion of the structural acreage credit can be achieved through area of steep soils dropped as "no-cut." Retain stand structure for wildlife where feasible. These structural requirements also call for the retention of four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 16 live trees >20"dbh and 12 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available, additional trees will have to be marked or clumped to leave. Steep soils are outside of unit to the north. 60% downhill yarding. Yarding system difficulties due to slackline system used for downhill yarding. Deleted acres due to uneconomic scrub. Future activities: regeneration surveys, plant red cedar, seed collection, survival survey, and precommercial thinning at 25+ years. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-021



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

No Cut Area (See Unit Card)



Slopes $\geq 72\%$



Old Growth Reserve



Unit 616-021



Unit Pool



Logging System Boundary



Project Boundary



Log Transfer Facility



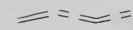
Proposed Landing



Eagle Nest



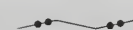
Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-021 ACRES: 41 VOL: 932 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/490-57,58 1/4 QUAD: ELEV.RANGE: 200-600 ASPECT: SE LOGGING SYSTEMS: HEL,SL,RS

WATERSHED#: F33A NAME/CAT#: Monie/102-50-27 ROAD#: 2180400, 2180600 WINDTHROW RISK: Medium

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F6, F11, F15, F18, F21, W1, W7, W34, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 21 and 32; Superstand Net Vol/ac= 21,277; Insects and Disease: Cedar Dieback- high; Downhill Yarding- N/A; Windthrow risk- medium-high; Logging systems Options- Running Skyline; Regeneration System Options- Clearcut-type B and Corridors; moderate mistletoe; Site Productivity- 3; Average Site Index (50yr)- 70.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 40 to 90 percent gradient, with about 2 acres of suitable ground for logging contained within an area of slopes greater than 72 percent gradient identified as suitable. The steep slopes occur on the western side of the unit and are associated with well-drained colluvial soils over bedrock. Forested wetlands occur on about 4 acres along the north unit boundary. The unit boundary was modified to exclude the extremely steep cliffy, slope section and wetlands areas along the west unit boundary (BMPs 12.5, 13.2 and 13.5). Use a combination of partial and full suspension to protect soil and wetland resources (BMP 12.5, 13.5, and 13.9). There are high value wetlands and fisheries resources downslope. Appendix A of Soils Resources Report documents the rationale for allowing timber harvest on slopes over 72 percent gradient. There is one water quality stream with a slope-break riparian area mid-unit (BMP 12.6). The riparian area is entirely within the stream buffer (BMP 12.6a and 13.16). See fisheries section for specific stream course protection measures (BMP 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards, see the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES (S. Farzan): Note: most of these streams were eliminated from the unit at the bottom.

Stream# 1 Class I Flagging BW C-type FP4 Monie Creek--recommend 300' no-cut buffer from FP4 portion. Becomes Class II at a barrier falls with an HC3 channel type.

Stream# 2 Class IV Flagging GW C-type HC5 no buffer needed, top at 240' elev. Class I below the unit.

Stream# 3 Class I/IV Flagging BW/GW C-type MM1/HC5 120' buffer on MM1, no buffer on Class IV, top at 250'.

Stream# 4 Class I/IV Flagging BW/GW C-type MM1/HC5 Class I is below unit (120' buffer) , Pacific Yew at Class I/IV break, top at 220'. No buffer on Class IV.

Stream# 5 Class I/III Flagging BW/OW C-type MM1/HC6/5 Class I portion requires 120' buffer, top of Class I at 200' elev. The Class III portion requires a slopebreak buffer and an additional 50' of partial cut beyond the slopebreak for windfirmness. Timing (coho and sockeye) will be needed for the road crossing on this stream. Passage may also be needed depending on final road location.

Stream# 6 Class I Flagging BW C-type MM1 Requires 120' buffer, small branch off of # 5 for about 200'.

Stream# 7 Class I/IV Flagging BW/GW C-type HC5 100' buffer on Class I and no buffer on Class IV.

Stream# 8 There is GW flagging at about 320' elevation on a channel, marked as #8. After walking it down, determined it is a non-stream, but the flagging was not removed.

Stream# 9 Class I Flagging BW C-type HC2 100' buffer, small channel flowing into pond, two blind Dolly Varden 8" and 5".

Lake/pond #10 directly south of unit with Dolly Varden and coho habitat--200' no-cut buffer.

BMPs 12.6, 13.16, 14.6

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Lots of snags throughout. Area to the east of the v-notch, (call station #1), is better goshawk habitat. Unit is plant associations western hemlock/western red cedar/blueberry and mixed conifer/blueberry/salal/deer cabbage. Pacific Yew trees were found near the southeast boundary of the unit (near the channel break between a Class III and a Class IV on Stream #3). An osprey was sited along the upper end of Monie Lake. 0.5-1 acre of high value marten habitat needs be located directly east of Stream #5, in the south western corner of the section of unit to the east of the stream the unit is split along.

GEOLOGY/MINERALS:

LANDS:

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUAL (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located in the lake basin north of Monie Lake. Present unit design would appear as obvious alterations to the landscape to the casual observer in the Monie Lake Basin. Recreation use in the area is light.

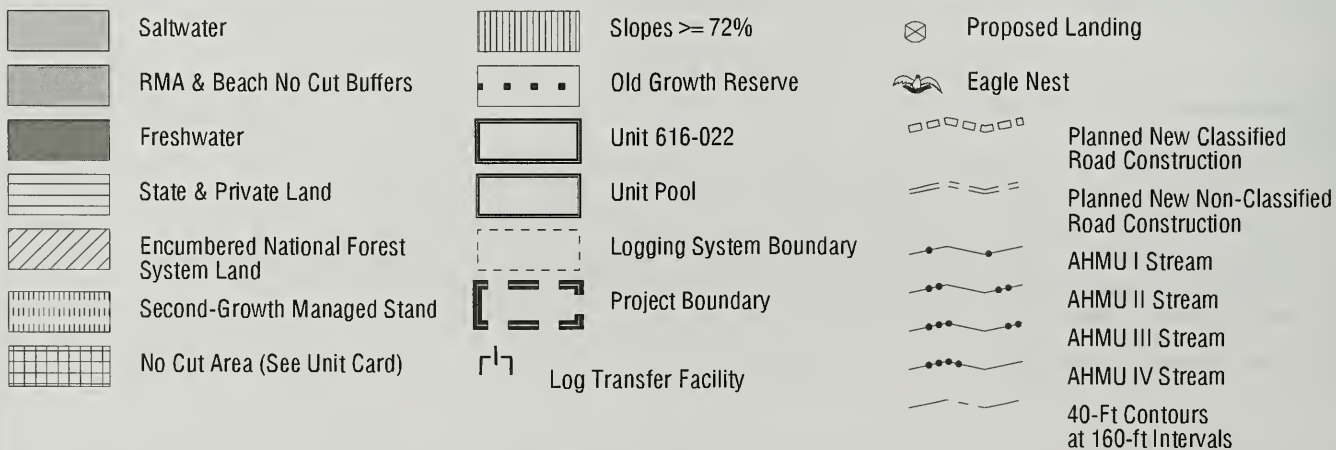
PRESCRIPTION (G. Lawton): One entry planned. Reserves would be retained. Reserves for wildlife, marten (<1 acre needed) soils mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut proposed due to moderate windthrow, mistletoe, and large trees. Helicopter may be required to get soils suspension on western 1/3 of unit. Clear-cut would provide clumps of reserve trees in islands or fingers within the unit. This type can be implemented where rock outcrops, cliffs, or blind leads make harvesting uneconomical or infeasible. In addition, clumps of reserve trees can be left in other areas if helicopter yarding or cable yarding with lateral yarding capability is the logging system to be employed. Requires 0.5 - 1 acres of high volume strata to be retained for high value marten habitat. Should be located east of Stream #5 at bottom of unit. Structural credit can be achieved through: deferred soil retention and the RAW buffer. 40% downhill yarding. Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) per acre and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This calculates out to 20 live trees >20"dbh and 15 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available, additional individual trees will have to be marked or clumped to leave. Much of the unit has been deleted for steep soils, scrub timber and low volume.

A combination of full and partial suspension is required on the entire unit (specialist during layout). Retain Pacific yew where feasible. Yarding system difficulties due to: very steep terrain with benches on western half of unit. Anticipated helicopter on at least the western 1/3 of the unit with skyline yarding the rest of the unit. However, benches and cliffs may force falldown of acres particularly on the west 1/2, use these as retention (blind leads) of 10-20% of the volume and for wildlife structural retention. Keep road up high and search for benches (2nd profile ran on east 1/2 of unit). Future activities: regeneration surveys and precommercial thinning at 20-25 years. Structure through addition of 50' RAW on Stream #5. Protect Yew at bottom of unit by leaving as reserve trees if operationally possible. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-022



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-022 ACRES: 38 VOL: 684 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/490-73 1/4 QUAD: ELEV. RANGE: 200-800 ASPECT: E LOGGING SYSTEMS: LS, SL,RS

WATERSHED#: F34A NAME/CAT#: Wimpy Fish ROAD#: 2180000-3, 2180700 WINDTHROW RISK: Moderate
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F18, F21, W1, W5, W7, W34, V1, V5, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 30, 38, 56, and 65; Superstand Net Vol/ac= 26,053; Insects and Disease: Cedar Dieback- high; Downhill Yarding- 12%; Windthrow risk- medium short trees; Logging systems Options- Live Skyline, slackline; Regeneration System Options- Group Selection and Clearcut-type D; Site Productivity- 4/4; Average Site Index (50yr)- 80/70.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 85 percent in the unit. Short discontinuous pitches of slopes over 72 percent gradient are associated with small cliffs scattered throughout the upper half of the unit. Unit 022 was modified following reconnaissance to avoid cliffs and low volume areas (BMPs 13.2 and 13.5). Forested wetlands occupy about 15 acres on slopes less than 40 percent gradient. Use partial suspension to minimize landslides and impacts to soil and wetland resources. The stream along the south unit boundary has an identifiable riparian area below the slope-break. The pond and stream east of the unit have a wetland riparian area. Both riparian areas are included in the no-cut buffers (BMP 12.6, 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards See the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES:

Stream# 1 Class I/III Flagging BW/OW C-type PA5/FP3/HC6. 200' buffer along east side of unit in the FP3 and PA5 area, 150' buffer along south side of unit on Class I portion, slopebreak buffer along stream on south side of unit where Class I; Class III portion requires a slopebreak buffer with an additional partial cut buffer of approximately one tree height beyond the slopebreak.
Stream# 2 Class III Flagging OW C-type HC5/MM1 A slopebreak buffer (of at least 25') is recommended for the stream including the MM1 portion with some partial cut for windfirmness (modification of S and G's).
Stream# 3 Class I Flagging BW C-type MM1 120' buffer required, 2 additional similar small channels are Class I flagged BW to the south of #3. They all require 120' buffers.
Stream# 4 Class I Flagging BW C-type MM1 120' buffer, changes to non-stream below a 75' high cliff with 10' boulders below.
Stream# 5 Class IV Flagging GW C-type HC5 no buffer required, top of stream at 450' elevation.
Stream# 6 Class IV Flagging GW C-type HC5 no buffer required, top of stream at 600' and we flagged down to 500' elev.

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is a rock wall and unstable soils at the north end of the unit. Unit is a western hemlock/western red cedar/salal plant association. Unit requires 1.2-2.4 acres of structural retention for marten habitat. Structure must be left in the northern 1/3 of the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): Visual management objective for this middleground viewshed is maximum modification. Combined scale of Units 616-022, 023 and 123 is a bit too large to meet this objective. Recommend retaining some forested texture in a few parts of Units 616-022 and 023 to break up the overall scale of harvest in this area.

RECREATION (J. Kluwe): Unit is located between Trollers Cove and Monie Lake. Recreation use in the vicinity of the unit is not probable.

PRESCRIPTION (G. Lawton): One entry planned. Reserves would be retained for marten, visuals and soils mitigation.

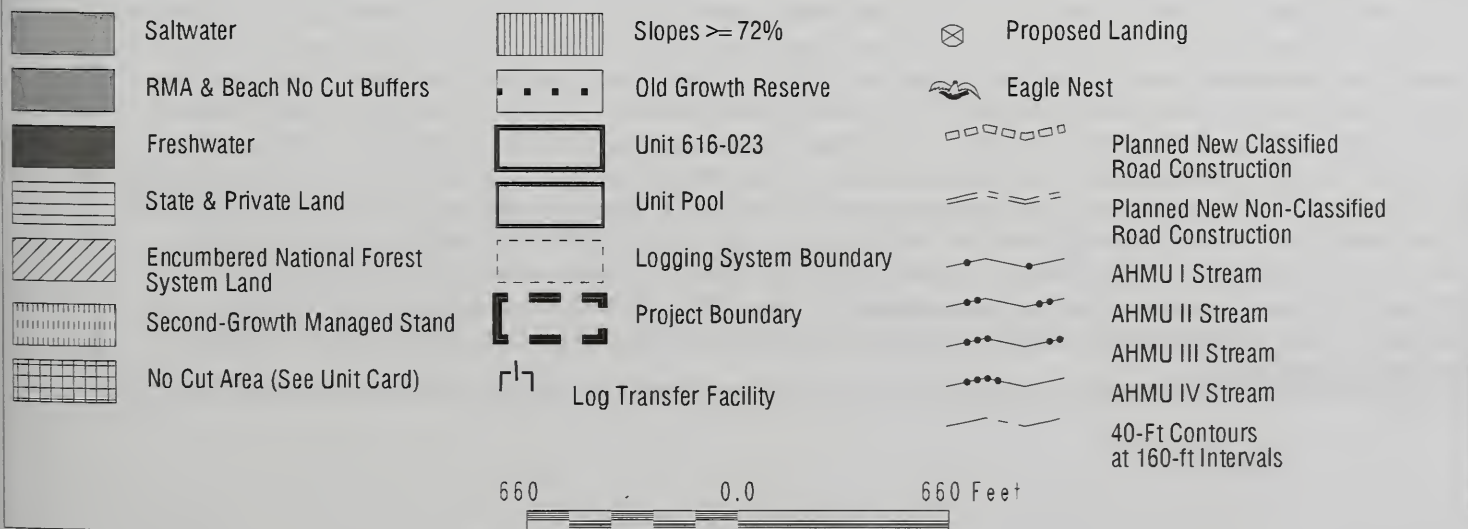
SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves above the road with cut/leave corridors beneath road: retain 25% of cutting unit, where feasible and safe.

Combination of full and partial suspension is required on the entire unit. Requires 3-5 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved through: <1.2 to 2.4 acres dropped due to soil steepness (if located in the northern 1/3), McGilvery content or other problems along eastern and northern boundary in high volume habitat near ponds. 20 % downhill yarding. Visual concerns partially addressed by dropped steep areas to the east and dropped steep low volume knob at center of unit. Mobile swing yarder could be used for the predominant small timber, however long reaches are required unless spurs are constructed. Clear-cut for downhill yarded portion above the mid-slope road and southern corner. Clear-cut would provide clumps of reserve trees in islands or fingers within the unit. This type can be implemented where rock outcrops, cliffs, or blind leads make harvesting uneconomical or infeasible. Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This calculates out to 100 live trees >20"dbh and 75 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available, additional individual trees will have to be marked or clumped to leave. Below road alternating cut/leave corridors out from road. ~200' wide corridors with 200' wide leave strips. Retain 25% of the BA of the overall unit. Corridors running directions other than straight East/West are best. Also for visuals, using the northern streams as split lines while retaining some residuals will help mitigate visual impacts. Feather upper backline for visuals on the northern half of unit.

Deleted acres due to high MMI and uneconomic scrub. Future activities: regeneration surveys, red and yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Group selection takes care of RAW needs. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-023



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-023 ACRES: 23 VOL: 248.4 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/490-73 1/4 QUAD: ELEV. RANGE: 200 ASPECT: SE LOGGING SYSTEMS: SL, LS,

WATERSHED#: DD1A NAME/CAT#: CLIFFO ROAD#: 2180000-3, 2180000-4, and 2180700 WINDTHROW RISK: medium

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W5, W7, W28, W34, V1, V5, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
<p>SILVICULTURE/TIMBER (G. Lawton):</p> <p>Exam Stands- 65; Superstand Net Vol/ac= 11,591; Insects and Disease: Cedar Dieback- high; Downhill Yarding- 33%; Windthrow risk- medium-high, short trees; Logging systems Options- Running Skyline and Live Skyline; Regeneration System Options- Clearcut-type B; Site Productivity- 4; Average Site Index (50yr)- 80. Many snags.</p>
<p>TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE</p>
<p>SOILS/WATERSHED (D. Landwehr):</p> <p>Slopes range from 40 to 70 percent gradient, with about 2 acres of slopes over 72 percent gradient in Unit 023 identified as suitable. Landslide potential is moderate and high. Most of the unit classifies as forested wetland. Use partial suspension to minimize impacts to soil and wetland resources. (BMPs 12.5, 13.5, and 13.9) Two streams have identifiable riparian areas below the slope-break (BMP 12.6). The riparian areas are entirely within the buffers (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.</p>
<p>FISHERIES: (J. Hannon)</p> <p>Stream# <u>1</u> Class <u>III</u> Flagging <u>OW</u> C-type <u>HC5</u> Keep unit boundary above slopebreak (south unit boundary). Stream# <u>2</u> Class <u>III</u> Flagging <u>OW</u> C-type <u>HC5</u> Leave a slopebreak buffer. Stream probably becomes Class IV through unit. This stream is mapped as Class I in GIS below unit. Stream was not walked to saltwater below unit. North part of unit not checked for streams.</p> <p>BMPs 12.6, 13.16</p>
<p>WILDLIFE (M. Dillman):</p> <p>Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. It is poor goshawk habitat. Majority of the unit is plant association western hemlock/western red cedar/salal. Unit has no high value marten habitat.</p>
<p>GEOLOGY/MINERALS:</p> <p>LANDS: No concerns.</p> <p>CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.</p> <p>VISUALS (J. Short): See discussion under Unit 616-022.</p> <p>RECREATION (J. Kluwe): Unit is located between Trollers Cove and Monie Lake. Recreation use in the vicinity of the unit is not probable.</p>
<p>PRESCRIPTION (G. Lawton): One entry planned. Reserves would be retained for visuals and soils mitigation.</p> <p>SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves with cut/leave corridors beneath road at south end; retain 25% of cutting unit, where feasible and safe. Soils partial suspension is required on the entire unit. Use clear-cut which calls for a specified number of snags and live (8-10 trees/acre) replacements with >16" diameter limits retained in 50 to 100 feet of the border. Due to the flexibility of the interior setting boundaries, live reserve trees for interior settings may only be required wherever a stream buffer is required. No high volume strata or marten habitat exists in unit. Already deferred areas will help to mitigate visuals concerns. RS may be a logging system option on the unit. Address visual concerns in area south and east side of unit by: running 150' wide corridors downslope, below the road, with intermittent retention areas between. <u>Retain ~25% of BA in the unit.</u> If not economical drop southern portion of the unit. If the mid-slope road exists, then the addition to the south is reachable. Generally very low volume stand, only feasible if system road goes right through the unit. Deleted acres due to high MMI and uneconomic scrub. Future activities: regeneration surveys, harvest evaluation on non-clearcut portion, and pre-commercial thin at 25+ yrs. Partial suspension required for soil protection. Unit adjacent to high volume strata timber, which is in the existing Old Growth Reserve to the east. See BMPs listed above.</p>



CHOLMONDELEY ROD Unit 616-024



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

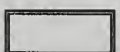
No Cut Area (See Unit Card)



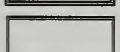
Slopes $\geq 72\%$



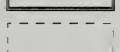
Old Growth Reserve



Unit 616-024



Unit Pool



Logging System Boundary



Project Boundary



Log Transfer Facility



Proposed Landing



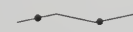
Eagle Nest



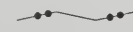
Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-024 ACRES: 55 VOL: 750 MBF ALTERNATIVES: 2,3,5,6,7,

PHOTO YR/#: 91/490-73,72 1/4 QUAD: ELEV. RANGE: 350-450 ASPECT: N LOGGING SYSTEMS: LS,SH,RS

WATERSHED#: DC10 NAME/CAT#: TROLLERS CABIN ROAD#: 2180000-4 WINDTHROW RISK: High
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W4, W7, W34, V1, V4, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands-73 and 74; Superstand Net Vol/ac= 19,877; Insects and Disease: Cedar Dieback- high; Downhill Yarding- 20%; Windthrow risk- High, but short trees; Logging systems Options- Live Skyline; Regeneration System Options- Corridor-Group Selection and Clearcut; Site Productivity- 5/4; Average Site Index (50yr)- 65/70.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 40 to 70 percent gradient, with about 3 acres of slopes over 72 percent gradient in Unit 023 identified as suitable. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Landslide potential is moderate and high. Most of the unit classifies as forested wetland. Use partial suspension to minimize impacts to soil and wetland resources. (BMPs 12.5, 13.5, and 13.9) Two streams have identifiable riparian areas below the slope-break (BMP 12.6). The riparian areas are entirely within the buffers (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification. GIS depiction of steep slopes is overstated.

FISHERIES (S. Farzan):

Stream# 1 Class IV Flagging GW C-type HC5 flagged from 440' to 300' elevation to where channel disappears, no buffer.

Stream# 2 Class III/IV Flagging OW/GW C-type HC5 Class III portion, slopebreak buffer. Changes to Class IV at 240'. Class IV portion will not be buffered.

North and east sides of unit were not thoroughly checked for streams, check and classify during layout.

BMP 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Rock ledges in unit. No high value marten habitat in the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Unit was surveyed during the 1997 field season. No cultural resources were located. No further concerns.

VISUALS (J. Short): Visual management objective for most of the area in which this unit is located is maximum modification (middleground portion of viewshed). The western portion of unit is in the foreground viewshed from the outer part of Trollers Cove. The foreground visual objective is modification. However, since this unit sits behind the Trollers Cove cabin, and is partially visible from the cove out in front of Trollers Cove cabin, it is recommended that the impact of this harvest, particularly the sharp edge created by the backline, be somewhat minimized by retaining some forested texture in the western part of the unit.

RECREATION: (J. Kluwe) Unit is located above Trollers Cove Cabin (FS Cabin). See visuals section for design comments related to the recreation setting. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.

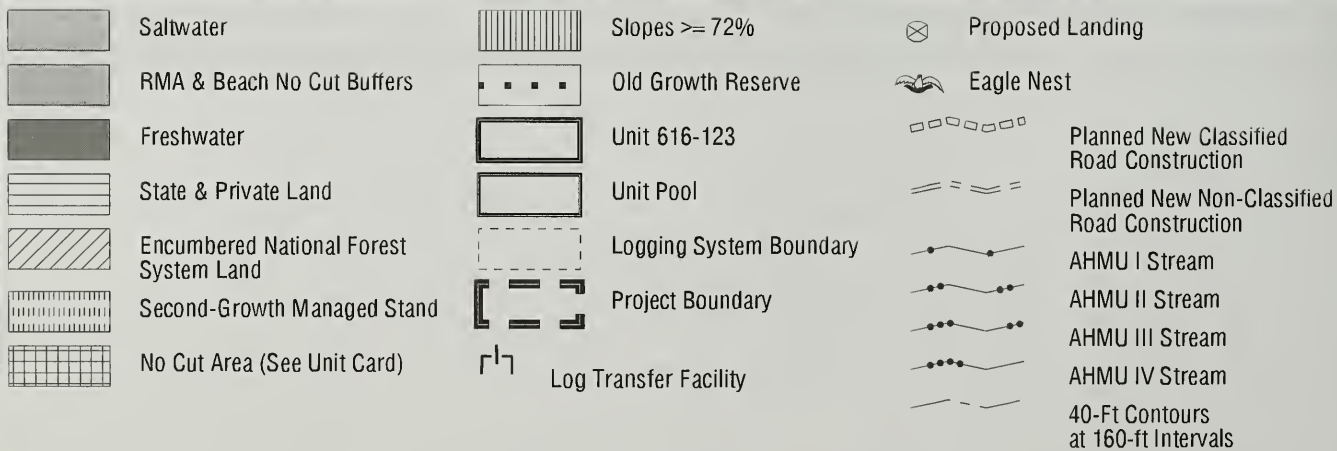
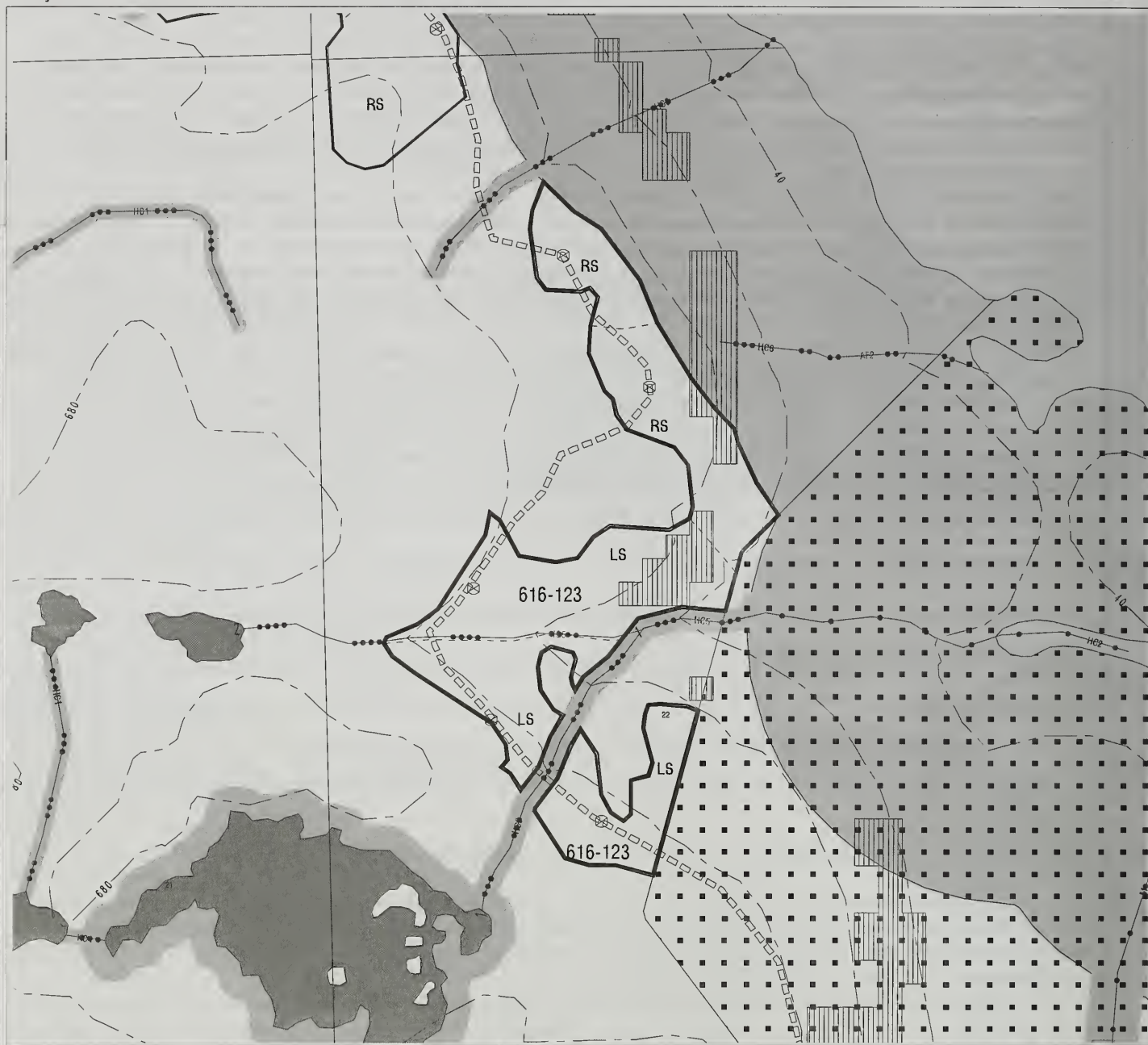
PRESCRIPTION (G. Lawton): Single entry planned. Reserves for visuals and wildlife retention strategy (connectivity).

SILVICULTURAL SYSTEM FOR THE ROD: Two-aged management clear-cut with reserves (~37 acres) left in alternating cut/leave strips (meet two-aged criteria) below the road and even-aged clear-cut with reserves (~18 acres) above the road. Use clear-cut above the road which calls for a specified number of snags and live (4 trees/acre) replacements with >16" diameter limits retained in 50 to 100 feet of the border. Due to the flexibility of the interior setting boundaries, live reserve trees for interior settings may only be required wherever a stream buffer is required. No high volume strata exist in unit. Soils partial suspension is required on the lower 2/3 of unit. Forested wetlands on upper reaches need low impact disturbance (partial suspension). Visuals: already dropped parts of upper backline. Feather backline along the backline. Build road to minimum width standards for less visual impact. Retain a structural buffer on the interior streams for visuals.

Criteria necessary for two-aged management below the road. Reserve trees left in perpetuity creating a two-structured stand. 1) Retention to be left standing is >15 percent of the volume or preferably >30 CCF. Reserve trees are left for other resource values: wildlife corridor needs, soil protection, or for marten habitat. 2). Distribution. Reserve trees left in clumps must be <2 tree heights apart and any trees left in an opening must be <1 tree height away from a clump or edge of a unit (clumps are minimum of 100' across, this allows for 200' width cut corridors). Reserve trees left as individual trees need to be distributed throughout the entire unit not >100' apart. 3). Size of opening. The opening must be <2 tree heights in width. Linear openings of slightly less are acceptable. Cut the area below the road in a corridor or pie-shaped pattern to retain 50% BA. Keep widest of the opening of the corridors ~150' in width, alternate w/retention areas. Feather all boundaries. Stay off of steep McGilvery cliffs - part of northern boundary. Mainly mobile swing yarder w/carriage, some shovel. Deleted acres due to high MMI and uneconomic scrub. Future activities: regeneration surveys, harvest evaluation on non-clearcut portion, and pre-commercial thin at 25+ yrs. Unit adjacent to 1000' buffer to east and west. See BMPs listed above.



CHOLMONDELEY ROD Unit 616-123



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-123 ACRES: 30 VOL: 501 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/490-72,73 1/4 QUAD: ELEV. RANGE: 300-400 ASPECT: E LOGGING SYSTEMS: RS, LS

WATERSHED#: DC9A/DC10 NAME/CAT#: Trollers cabin ROAD#: 2180000-4 WINDTHROW RISK: Moderate
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F18, F21, W1, W7, W28, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 65, 68, and 73; Superstand Net Vol/ac= 19,409; Insects and Disease: moderate rot, cedar die back and mistletoe;

Downhill Yarding- 5%; Windthrow risk- medium; Logging systems Options- Running Skyline, LS; Regeneration System Options- CC -type; Site Productivity- 4; Average Site Index (50yr)- 70.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 40 to 70 percent gradient in the unit. Unit 123 was modified following reconnaissance to avoid cliffs, steep slopes, wetlands and inoperable areas (BMP 12.5, 13.2, and 13.5). There is a 20 foot high cliff located mid-unit. About half of the unit is forested wetlands. Thin (<20 inches) organic soils cover the small rock knobs in the unit. Use full suspension over the cliffs and partial suspension in the rest of the unit to control soil displacements, landslide potential, and impacts to wetland resources (BMPs 12.5, 13.5, and 13.9). A slope-break riparian area occurs on one water quality stream mid unit (BMP 12.6). The riparian area is entirely within the no-cut buffer (BMP 12.6a). See fisheries section for specific stream course protection measures (BMPs 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards See the soils report for details.

FISHERIES: (J. Hannon)

Stream# 1 Class III Flagging OW C-type HC5 recommend slopebreak buffer + 25' partial cut for windfirmness, coho and Dolly Varden below unit.

Stream# 2 Class IV Flagging not flagged in field due to questionable classification C-type HC5 no buffer required BMP 12.6, 13.16

WILDLIFE (M. Dillman):

Wildlife did not visit this unit due to information from other resources concerning the scrub timber. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. 1.2-2.4 acres retained overall. The high value marten habitat needs to be located in the northern half of the second setting from the north or to the east of Stream #1 after it enters the unit and then turns south. Maintain 1,000-foot beach/estuary buffer.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): Units north of Doctor Point-This area is Timber Production with a VQO of Maximum Modification. The overall scale of all the units, particularly 616-123, 023, and 022 is a little too large to meet the maximum modification. VQO. I would recommend retaining a fair amount of structure in just a small portion of Units 023 and 022 (see maps and plots)-possibly 50 to 75%. Or maybe just dropping off those portions of those units (north of drainage in 022 and south of drainage in 023).

RECREATION (J. Kluwe): Unit is located between Trollers Cove and Monie Lake. Recreation use in the vicinity of the unit is not probable.

PRESCRIPTION (G. Lawton): Single entry planned. Reserves for visuals, marten, and wildlife retention strategy (connectivity).

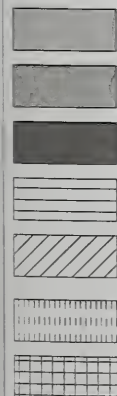
SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves above the road. Use clear-cut which calls for a specified number of snags and live (8-10 trees/acre) replacements with >16" diameter limits retained in 50 to 100 feet of the border. Due to the flexibility of the interior setting boundaries, live reserve trees for interior settings may only be required wherever a stream buffer is required.

Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This calculates out to 56 live trees >20"dbh and 42 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional individual trees will have to be marked or clumped to leave.

Use NE running creek as split line and retention and windfirm buffer as residuals for marten and visual needs. Adjacent to 1,000' beach/estuary buffer to NE. Soils partial/full suspension is required (see soils section). 2-3 acres of structural retention required for high value marten habitat. Structural acreage credit can be achieved through: retention along the stream or using blindleads, trees left in split-yarding areas, feathering of the backline (will help mitigate visual concerns), seed trees retained, wildlife islands where logging safety can be maintained. Final unit layout will avoid cliffs. Clumps contain a minimum of 30% canopy closure. Yarding system difficulties due to cliffs, rock outcrops and tail hold availability. Future activities: regeneration surveys, release, and precommercial thinning at 20 to 25 years. Volumes/acre are low and yarding over cliffs maybe difficult. See BMPs above.



CHOLMONDELEY ROD Unit 616-275



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

No Cut Area (See Unit Card)



Slopes $\geq 72\%$

Old Growth Reserve

Unit 616-275

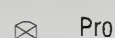
Unit Pool

Logging System Boundary

Project Boundary



Log Transfer Facility



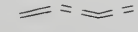
Proposed Landing



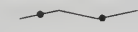
Eagle Nest



Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 616-275 ACRES: 71 VOL: 1917 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/490-57,58 1/4 QUAD: ELEV. RANGE: 200-1500 ASPECT: S LOGGING SYSTEMS: HE, SL

WATERSHED#: F33A NAME/CAT#: Monie/102-50-27 ROAD#: 2180400 WINDTHROW RISK: Moderate - High
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W7, W28, W34, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 43, 45, and 48; Superstand Net Vol/ac= 29,419; Insects and Disease: n/a Downhill Yarding- 90%; Windthrow risk-medium- high; Logging systems Options- Helicopter and Slackline; Regeneration System Options- CC-A and CC-C; Site Productivity- 4; Average Site Index (50yr)- 70.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr): Slopes range from 40 to 90 percent gradient with approximately 8 acres of suitable ground for logging contained within an area of slopes greater than 72 percent gradient. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. The unit boundary was modified after project reconnaissance to exclude cliffs, rock outcrops, and extremely steep slopes (BMP 13.2 and 13.5). Use full suspension on slopes over 72 percent gradient east of Stream 7 and partial suspension on lesser slopes to maintain soil productivity and wetland resources (BMP 12.5, 13.5, and 13.9). The break between the helicopter and cable log setting west of Stream 7 should be determined by profile analysis and the break set where partial suspension can no longer be achieved. A small-forested wetland/short sedge wetland complex forms the riparian area on Upper Monie Creek downslope of the unit. A small old landslide and colluvial deposit form another small riparian area. The remaining streams have small riparian areas that are unmappable at a scale of 1:15,840 (BMP 12.6). See fisheries section for stream course protection measures. An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards. See the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES (S. Farzan):

Stream# 1 Class III Flagging OW C-type MM1/MC1/HC5 Southern unit boundary stream, 120' buffer along the MM1 channel, 100' along MC1 and then 75' buffer (approximate height of trees there) along the HC5 to the top of the unit.

Streams# 2-8 Class IV Flagging GW C-type HC5

#2 flows into #1 at 570' elevation. #3 flows into #1 at 500' and top is at 500. #4 intersects #1 at 440' and top is at 780'. #5 intersects #1 at 400' and top is at 670'. #6 flows into #5 and top is at 480'. #7 becomes HC2 by helispot, did not walk to top of Stream. #8 top flagged at 950' and intersects with #7 at 400' elevation.

Stream# 9 Class III/IV Flagging OW/GW C-type HC5 leave a slopebreak buffer along the Class III portion, top of Class IV is at 550' elevation.

Streams # 10-14 Class IV Flagging GW C-type HC5

The top of #10 is at 780' elevation. Top of #11 is at 420' and it flows into #4 at 400'. Top of #12 is at 600'; we flagged to 550' but the top is not flagged and the stream may continue up (might be east unit boundary on original unit map). Flagged #14 to about 400' where flows together with #13.

The area around Streams 10-14 appeared fairly unstable and wet although the stream channels are not large, an old slide is at top of #12, probably better to delete eastern portion of unit and expand on the southwest towards Stream #1.

Fall and yard away from Class IV streams if practical, otherwise use partial extension if yarding across, but avoid downhill yarding across the Class IV streams. Leave non-commercial trees along all streams.

BMPs 12.6, 13.16, 13.5

WILDLIFE (M. Dillman):

Wildlife did not visit this unit due to information from other resources concerning steep slopes. Rock cliffs were noted as well. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Retention in the unit should be between (0.6-1.2) acres. High value marten habitat needs to be retained between Streams # 7 and #8.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifiel): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located in the lake basin west of Monie Lake. Portions of the unit may be visible from Monie Lake. Recreation use in the vicinity of the unit is not probable. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.

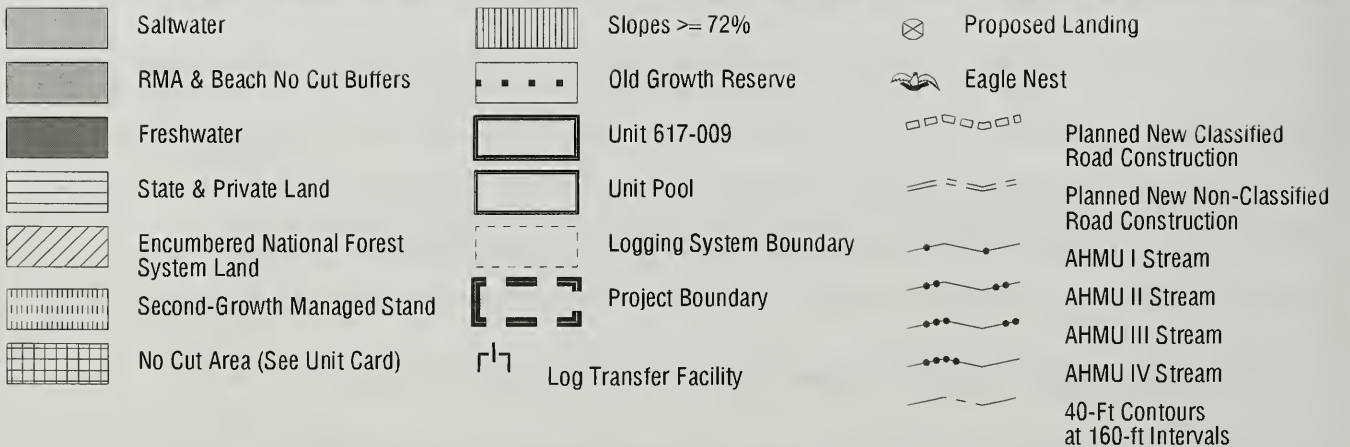
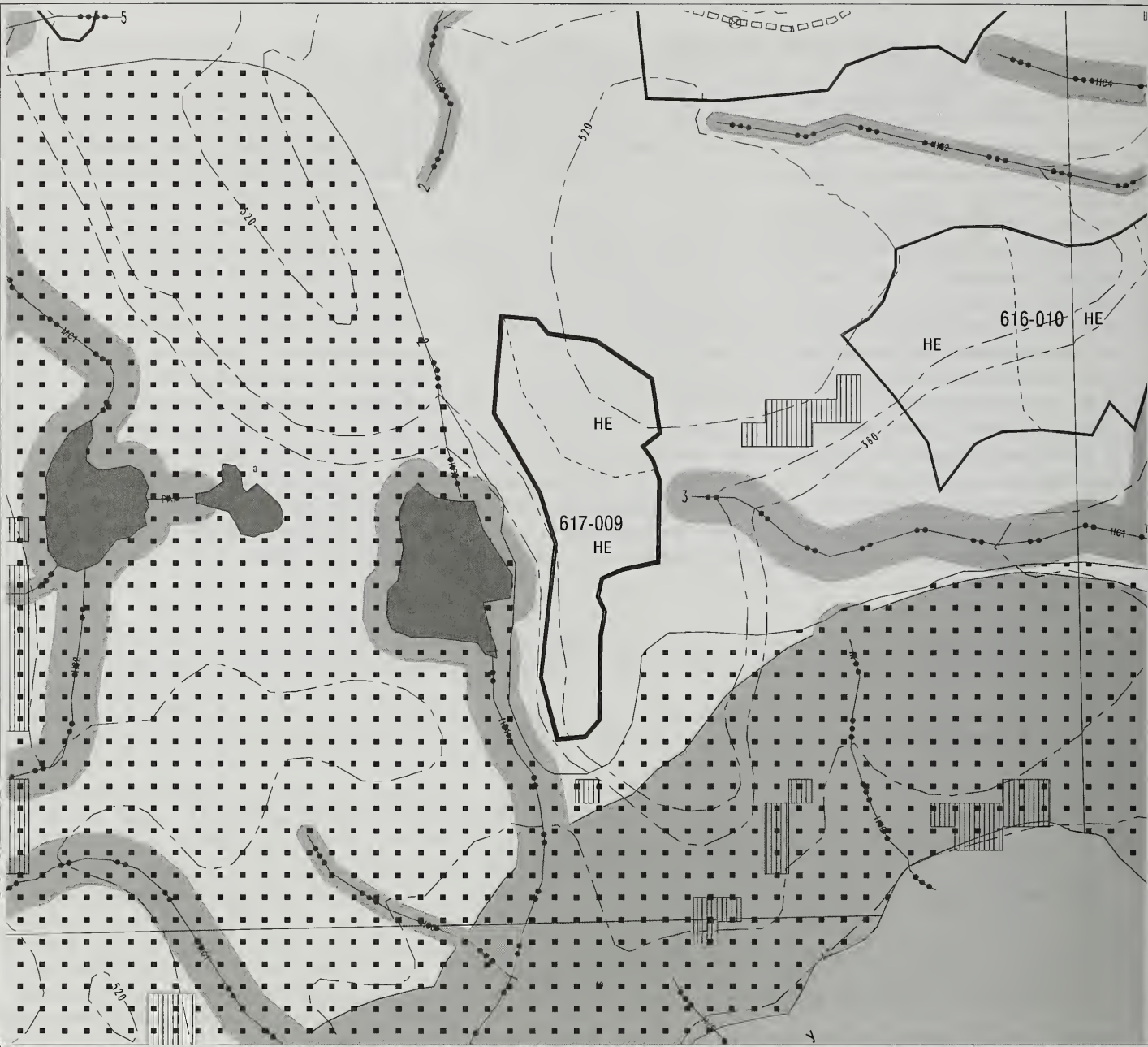
PRESCRIPTION (G. Lawton):

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut w/ reserves: retain < 15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut which calls for leaving safe snags and non-merchantable reserve trees within a 50 to 100 foot border along harvest unit edges and non-merchantable trees near internal setting boundaries if safety is assured. In this case, trees are directionally felled toward the landing and carefully yarded out of the buffer. Soils requires full suspension on 8 acres of slopes over 72% gradient. Requires 1-2 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved through: presale will need to layout additional acres of retention using blindleads, trees left in split-yarding areas, seed trees retained, wildlife islands where logging safety can be maintained. Clumps contain a minimum of 30% canopy closure. Buffer between streams 7&8 could be used for structure retention for marten (otherwise difficult to yard) or in steep acres dropped at upper corners of unit (these upper corners are not high value marten habitat).

Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags(greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This calculates out to 28 live trees >20"dbh and 21 snags >20"dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above(need field verification). If trees are not available additional individual trees will have to be marked or clumped to leave. See profiles. Steep areas on top were dropped & wet areas on bottom were dropped. 90% downhill yarding . May be difficult to downhill yard with stream angles. Reach as high as possible with cable and helicopter the rest. Fisheries/and soils need to be present during layout/logging. Anticipate fall-down of volume determined after profile analysis. Future activities: regeneration surveys and pre-commercial thinning at 20 to 25 years. Partial and full suspension required for soil protection. See soils above. See BMPs listed above.



CHOLMONDELEY ROD Unit 617-009



660 0.0 660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 617-009 ACRES: 15 VOL: 213.75 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/490-76,75 1/4 QUAD: ELEV. RANGE: 250,400 ASPECT: E-W LOGGING SYSTEMS: H

WATERSHED#: F33B NAME/CAT#: Clover West/102-50-23 ROAD#: 2180000-1, 2180000-2, 2180050

WINDTHROW RISK: Moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F18, F21, T4, W1, W7, W20, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- N/A; Superstand Net Vol/ac= N/A; Insects and Disease: Cedar Dieback- high, Mistletoe- high and Rot- medium;

Windthrow risk- medium-high; Logging systems Options- Shovel; Regeneration System Options- Clearcut-type A and B; Site Productivity- 5; Average Site Index (50yr)- 65. Low volume.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 30 to 60 percent gradient in unit 009. Approximately 8 acres of the unit classify as forested wetland. Use partial suspension to maintain soil and wetland resources (BMP 12.5 and 13.9). There is a narrow lakeshore and stream riparian area that will be entirely within the no-cut buffers (BMPs 12.6 and 12.6a). See fisheries section for lake and stream course protection measures (BMP 13.16)

FISHERIES (J. Hannon)

Stream# 1 Class I/IIA Flagging BW C-type HC1 A 100' TTRA buffer with some additional trees for windfirmness recommended. Dolly Varden present along unit.

Lake #1: Class IIA 100' TTRA buffer with some additional trees for windfirmness recommended (about 50'), Dolly Varden probably present.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a western hemlock/western red cedar/salal plant association There is no high value marten habitat in this unit.

Maintain 100 foot no cut buffer on the lake.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns. Very little if any of unit visible from Clover Bay.

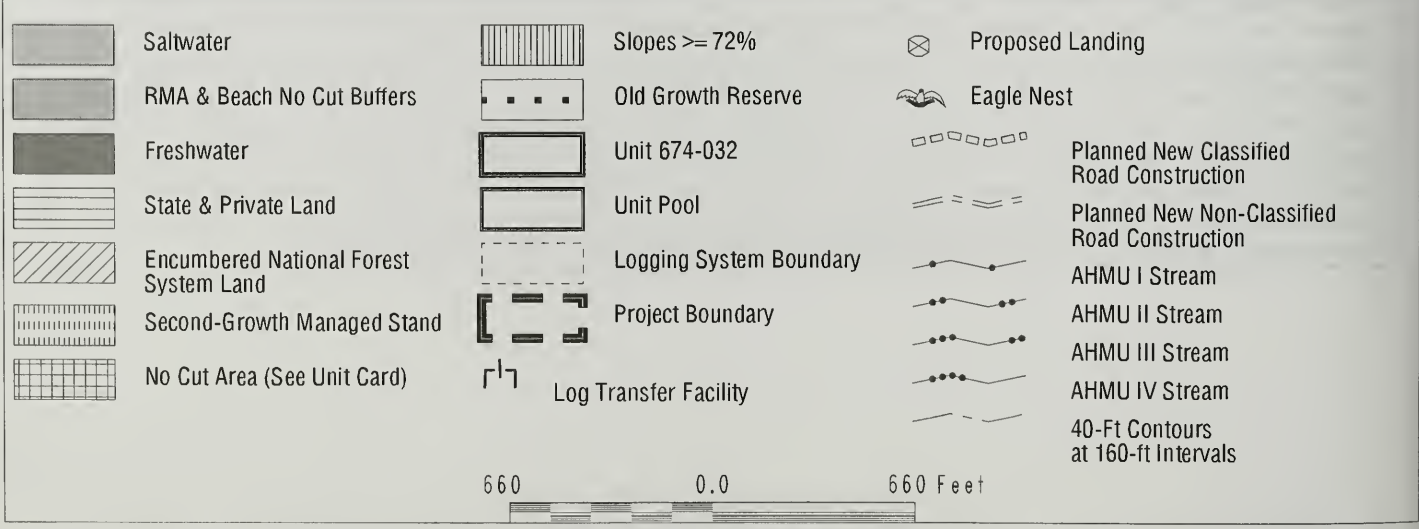
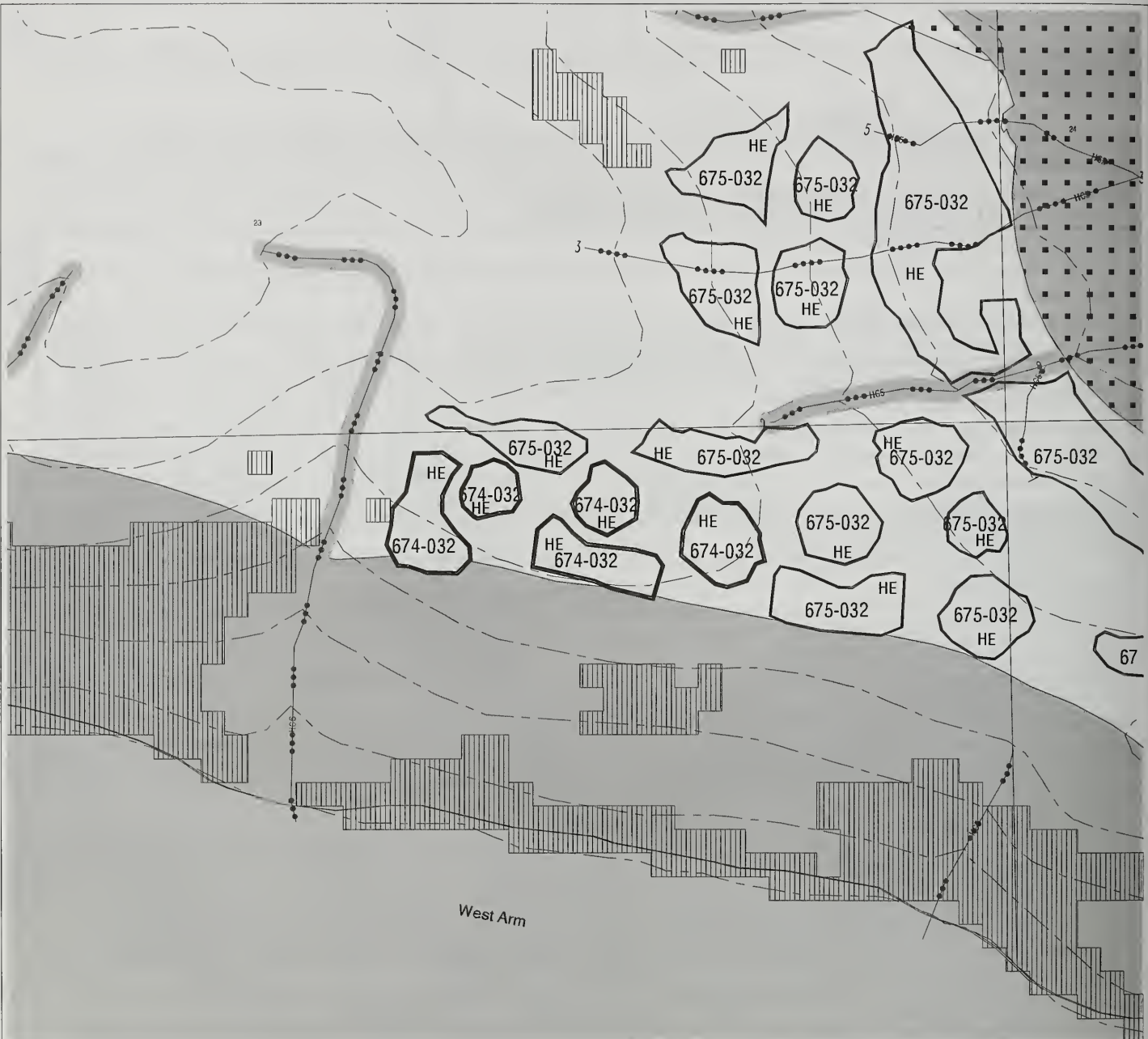
RECREATION (J. Kluwe): Unit is located above Clover Bay. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the Clover Bay area.

PRESCRIPTION (G. Lawton):

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut. Clear-cut leave safe snags and non-merchantable reserve trees within a 50 to 100 foot border along harvest unit edges and non-merchantable trees near internal setting boundaries if safety is assured. In this case, trees are directionally felled toward the landing and carefully yarded out of the buffer. No high volume strata or marten habitat exists in unit. Soils partial suspension is required on the NE 1/3 of the unit. Surrounded by scrub and unit is smaller then appears on map. Drop off southern spur and reach what is feasible by shovel. Cut unit short to the south to eliminate visual conflict at lodge in Clover Bay. Shovel logging system is anticipated on South and West, RS on NE (suspension required). Deleted acres due to uneconomic scrub. Future activities: regeneration surveys, red cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Unit near old-growth reserve boundary. See BMPs listed above.



CHOLMONDELEY ROD Unit 674-032



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-032 ACRES: 9 VOL: 450 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/590-20,19 1/4 QUAD: ELEV. RANGE: 600-800 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: 000Z/ NAME/CAT#: ROAD#: None WINDTHROW RISK: HIGH

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, K1, K2, K, F1, F11, F18, F21, T4, W6, W7, W28, W34, V4, V6, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS /RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 50 and 53; Superstand Net Vol/ac= 62,045; Insects and Disease: Mistletoe- high and Rot- high; Downhill Yarding- 90%; Windthrow risk- high; Logging systems Options- Helicopter; Regeneration System Options- Overstory removal- 26", and Clearcut type-D; Site Productivity- 2-H; Average Site Index (50yr)- 100. Data show relatively wide spaced, large trees, mostly hemlock.

TRANSPORTATION (Jack Oien): NO CONCERNS

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 50 percent gradient. The unit is entirely underlain by karst. Use a minimum of partial suspension to protect soil and karst resources (BMP 13.9). Full suspension will be achieved via helicopter yarding. Design unit boundaries to prevent windthrow (BMP 13.2). Two slope-break riparian areas are present on Class 3 and 4 streams. Portions of the riparian areas are in no-cut buffers. Depending on the size of the reasonable assurance of windfirmness zone the entire riparian area may be in the buffers (BMP 12.6a and 13.16). See fisheries section for stream course protection measures (BMP 13.16). Involve a soil scientist during layout to verify slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (J. Hannon)

Unit not field reviewed by fisheries. GIS shows three Class III HC5 and HC6 channels within and adjacent to the unit. These may require slopebreak buffers. Plan for slopebreak buffers and evaluate stream classification and protection in unit during layout. One stream is mapped as Class IIB below the unit. This is a low concern watershed for fisheries. BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit surveyed by boat. The 0.9-1.8 acres of high value marten habitat can be retained anywhere in the unit except the SE ¼.

GEOLOGY/MINERALS (J. Baichtal): The unit is predominately underlain by marble in which karst drainage systems have developed. Soils tend to be a mosaic of shallow organic and residual soils. No karst features were inventoried within the proposed unit boundary. If the inventory missed any karst features, the group selections should be designed to avoid these features as per the requirements of the Forest Plan Karst and Cave resource standards and guidelines. Partial suspension is required throughout the unit. Full suspension will be achieved via helicopter yarding.

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): The units along the West Arm are in a foreground zone. Hence they need to meet a partial retention objective. To meet this objective these units should generally consist of scattered clearcuts of from 5 to 15 acres that are for the most part located on the gentler slopes and on ridge tops or benches where they will blend into the topography. The steeper, more visible portion of these treatment areas should have enough forested texture remaining so that they appear similar to adjacent unharvested stands and so that any harvest activity is not easily discernable. Unit 674-032 sits on a ridge top and is ok as proposed. No specific mitigation measures are required to meet scenic objectives.

RECREATION (J. Kluwe): Unit is located west of Sunny Cove, opposite the community, and above and inventoried recreation site. See visuals section for design comments related to the recreation setting, as viewed from Sunny Cove.

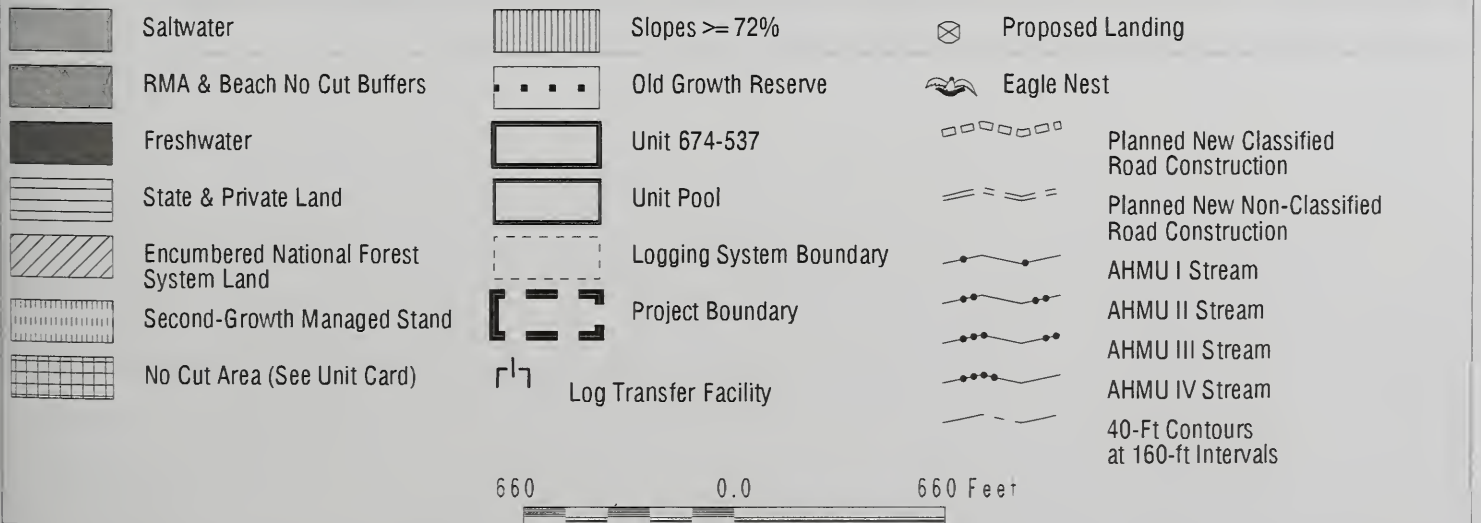
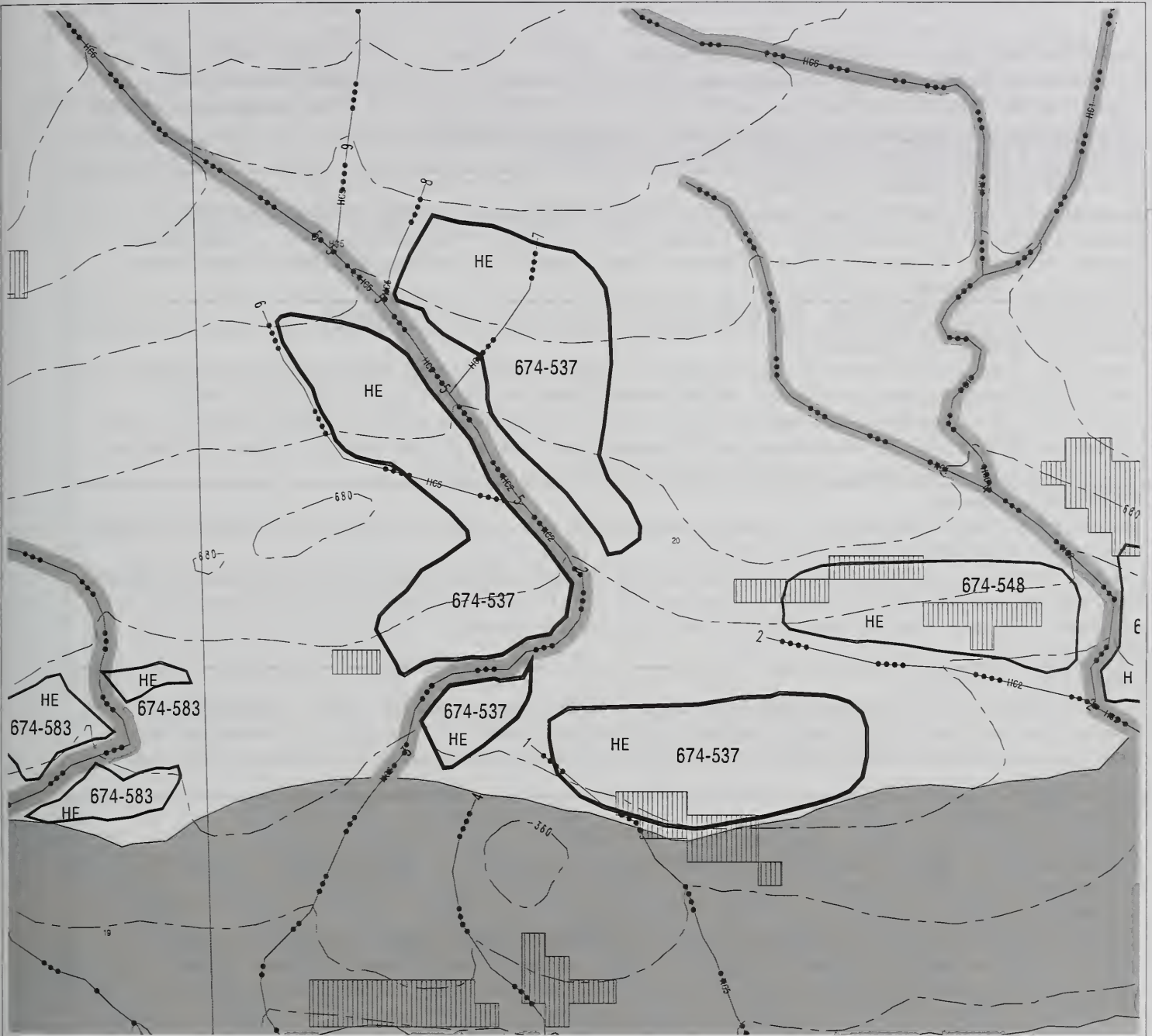
PRESCRIPTION (G. Lawton): One-entry proposal in the future during this rotation.

SILVICULTURAL SYSTEM FOR THE ROD: Reserves to meet goals listed below. Even-aged 2-acre clearcuts with reserves. Harvest 40-50% of the volume in small two-acre cuts. Requires 1-3 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved though: acres dropped due to Karst features and many acres retained between group selections. Soils partial suspension is required on most of unit. Karst features may require special yarding (see geologist), helicopter yarding will mitigate. Actually part of unit 675-032 Karst benches parallel contours, steep areas, McGilvery soils, high windthrow risk, partial retention for foreground zones, and high volume marten strata requiring retention all point to difficult downhill yarding decisions. There is also a pocket of dying trees near the saddle. Goals would be to: 1) Protect karst - options retention pockets and/or suspension of logs; 2) Guard against windthrow - option limit size of opening in the canopy to 1 -2 acres or individual tree marking throughout stand; 3) protection of steep and McGilvery soils - option to suspend logs; 4) limit visual impacts - option limit openings size or retain a portion of canopy; 5) protect structure in high value marten habitat on ~ 3 acres - option retain canopy structure in groups or retain 30% throughout cut; 6) salvage disease packet - option center cuts on this area. Road stopped east of Sunny Creek and helicopter these portions with 1-2 group selections, spread across the unit, centered on any dead/diseased tree packets, retention (non-cut areas) centered on the karst features, and steep McGilvery areas. Cut ~ 40-50% of the unit acreage in these cut pockets. Protect residuals in this high volume stand by keeping the cut pockets small.

Deleted acres due to High MMI and Karst features. Partial suspension required for soil protection. Unit adjacent to 1000' buffer. Future activities: regeneration survey. Slope break covers RAW needs. See BMPs listed above.

ROD change: Due to one-entry proposal, leave trees will not be harvested until the regenerated portions are ready for commercial harvest.

CHOLMONDELEY ROD Unit 674-537



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-537 ACRES: 44 VOL: 731 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/390-93,92 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: F25A NAME/CAT#: 2ND WEST ROAD#: None WINDTHROW RISK: M-L

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F18, F21, W1, W7, W28, W34, V1, V6, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

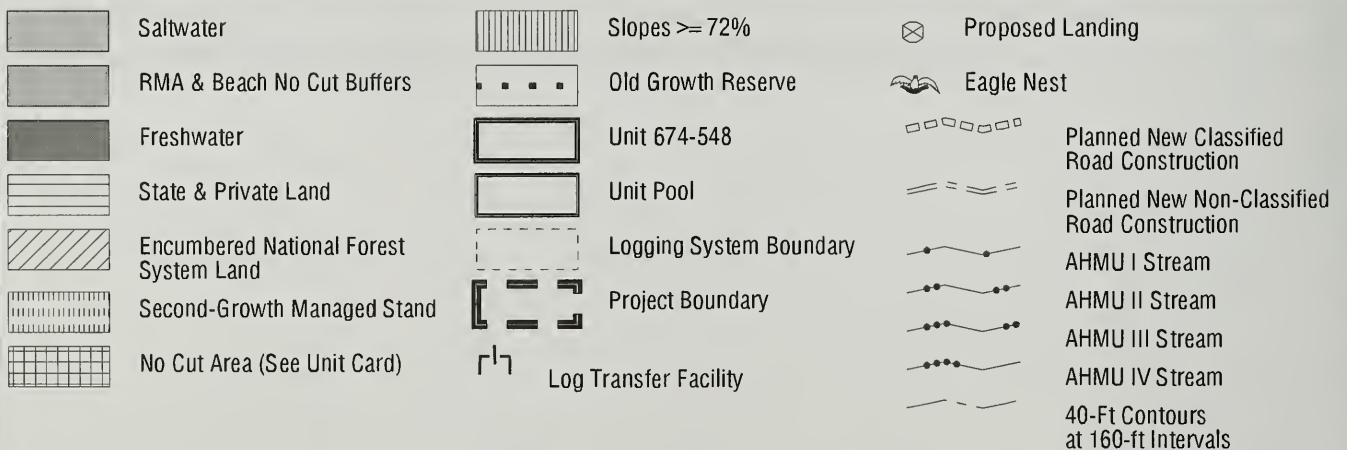
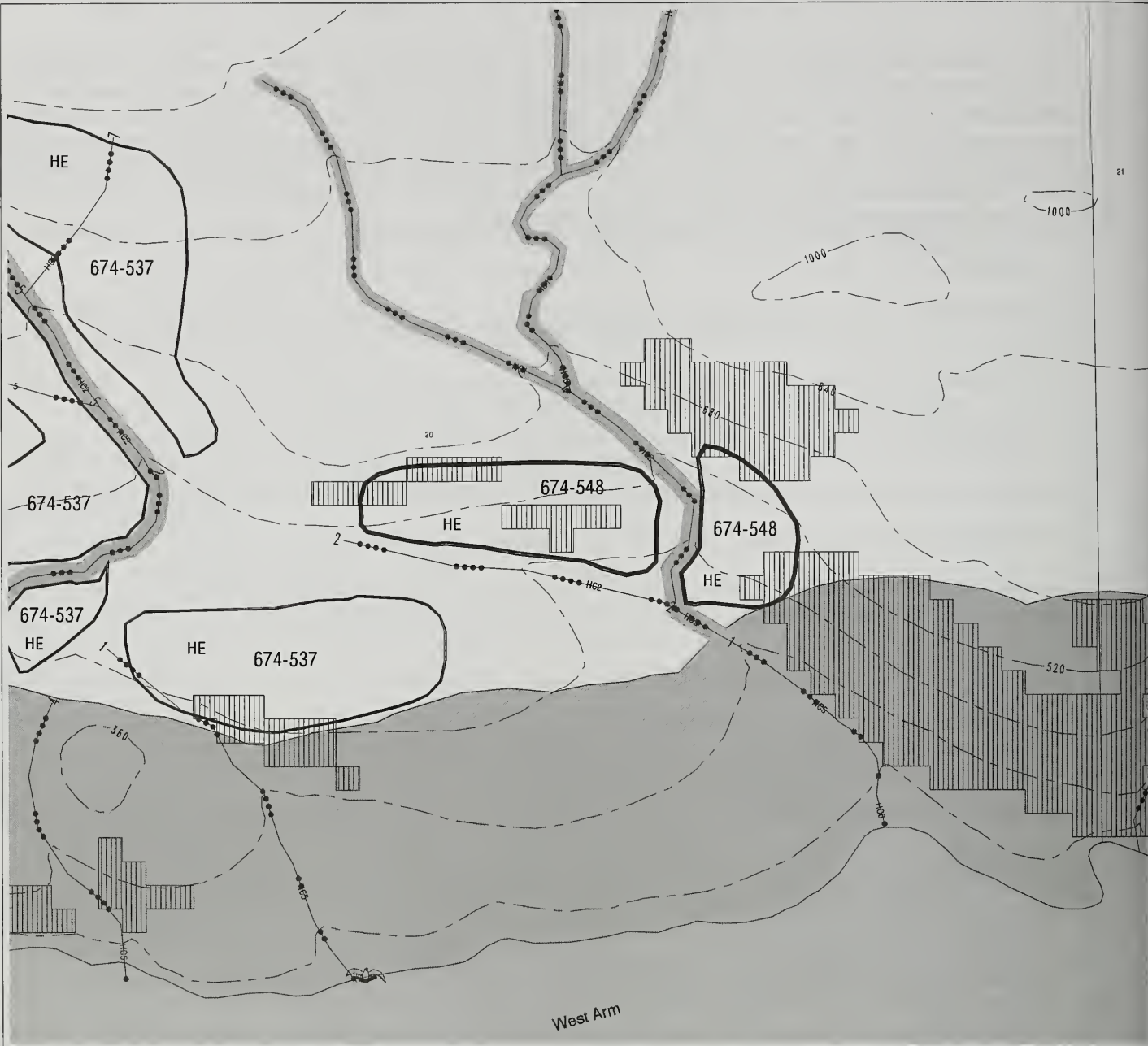
RESOURCE CONSIDERATIONS/RECOMMENDATIONS
SILVICULTURE/TIMBER (G. Lawton) Exam Stands- 32, 19, and 34; Superstand Net Vol/ac=12,705; Insects and Disease: Cedar dieback- high, Mistletoe- high and Rot- medium; Downhill Yarding- >50%; Windthrow risk- medium - low; Logging system Options- Helicopter; Regeneration System Options- Clearcut type-D and Even-Aged (relatively even diameter distribution); Site Productivity- 4-M;
TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE
SOILS/WATERSHED (D. Landwehr) Slopes range from 20 to 60 percent gradient in unit 537.. Approximately 40 acres classify as forested wetlands. Use a minimum of partial suspension to protect soil and wetland resources (BMPs 12.5, 13.5, and 13.9). Full suspension is recommended via helicopter yarding. A riparian area occurs on one water quality stream below the slope-break (BMP 12.6). The riparian areas will be entirely within the no-cut buffers (BMP 12.6a). See fisheries section for specific stream course protection measures (BMPs 12.6a and 13.16).
FISHERIES (J. Hannon) Stream checked only at saltwater (HC2), Dolly Varden present, flow too low for pinks. Dolly Varden don't make it up near unit. Watershed is relatively low concern. A Class III stream flows through the unit. Leave a slopebreak buffer on the Class III. Three O/W Class IV streams flow into the Class III. Fall and yard away from the O/W Class IV streams. Three G/W Class IV streams are within and adjacent to the unit. No buffer required on the Class IV streams. BMP 12.6, 13.16
WILDLIFE (M. Dillman) Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. . Unit is a western hemlock/western red cedar/blueberry/salal plant association.. The high value marten habitat will need to be retained either in the southeast corner of the unit or north of the stream in the southwest corner of the unit. (1.1 acres).
GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns. VISUALS (J. Short): The units along the West Arm are in a foreground zone. Hence they need to meet a partial retention objective. To meet this objective these units should generally consist of scattered clearcuts of from 5 to 15 acres that are for the most part located on the gentler slopes and on ridge tops or benches where they will blend into the topography. The steeper, more visible portion of these treatment areas should have enough forested texture remaining so that they appear similar to adjacent unharvested stands and so that any harvest activity is not easily discernable. RECREATION: Unit is in proximity to recreation sites in the West Arm of Cholmondeley Sound. See visuals section for design comments related to the recreation setting, as viewed from West Arm.

PRESCRIPTION (G. Lawton): Potential for future entries when visually less sensitive, however may be uneconomical. Reserves for visual, marten and soils needs.

SILVICULTURAL SYTEM FOR THE ROD: Even-aged clear-cut with reserves would leave non-merchantable trees and safe snags over the entire unit. This clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Soils partial suspension is required on the south and north ends. Helicopter logging system on entire unit. Forest Plan requires 1-2 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved through: acres of buffers on streams (western most stream only is high value marten habitat) and overstory removal residual. For visual and structural retention purposes: on the upper half of the unit place 100' buffer on Stream #5. This will create a visual screen to meet VQOs. Upper boundary is also to be feathered. Future activities: regeneration surveys, release, and pre-commercial thin at +25yrs. Combination of partial and full suspension will be prescribed during the final unit layout. Partial suspension required for soil protection. Unit adjacent to 1,000' beach/estuary buffer. A reduction of acres in the layout phase will benefit visuals. See BMPs listed above.



CHOLMONDELEY ROD Unit 674-548



660 0.0 660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-548 ACRES: 14 VOL: 260 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/390-93,92 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: F26A NAME/CAT#: 4th West ROAD#: None WINDTHROW RISK moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W7, W28, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- N/A; Superstand Net Vol/ac= N/A; Insects and Disease: Cedar dieback- high; Downhill Yarding- N/A; Windthrow risk- medium; Logging system Options- Helicopter; Regeneration System Options- Clearcut type-D and Even-Aged; Site Productivity- 4-M.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE.

SOILS/WATERSHED (D. Landwehr):

Slopes range from 40 to 75 percent gradient with an estimated 1 acres of slopes over 72 percent gradient identified as suitable. Full suspension required on the steeper slopes. About 6 acres classify as forested wetland. Use a minimum of partial suspension to protect soil and wetland resources (BMPs 12.5 and 13.9). Two streams have identifiable riparian areas below the slope-break (BMP 12.6). The riparian areas will be entirely within the no-cut buffers. (BMP 12.6a). See fisheries section for specific stream course protection measures (BMP 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (J. Hannon)

Stream checked only near mouth. Pink salmon probably use the stream in the ITZ and to about 100' upstream, Dolly Varden probably present to about 300' upstream, stream fairly large (Bank full width [BFW] ~ 9m). Low concern watershed for fisheries. Recommend moving the southern unit boundary to Class IV stream bank. Unit contains one Class III and borders on a Class IV stream. Buffer the Class III with a slopebreak buffer. No buffer required on the Class IV.

BMP 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat and snag density. The unit has scrubby timber and numerous snags. Since this unit is being helicopter logged it should be possible to leave standing structure within the unit boundary. The unit is a western hemlock/western red cedar/blueberry/salal plant association High value marten habitat will need to be retained in the southeast corner of the unit near Streams #2 and #4 0.5-1.0 acre. Unit is adjacent to old growth reserve and 1000' beach buffer.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield) : Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See Unit 674-537 discussion.

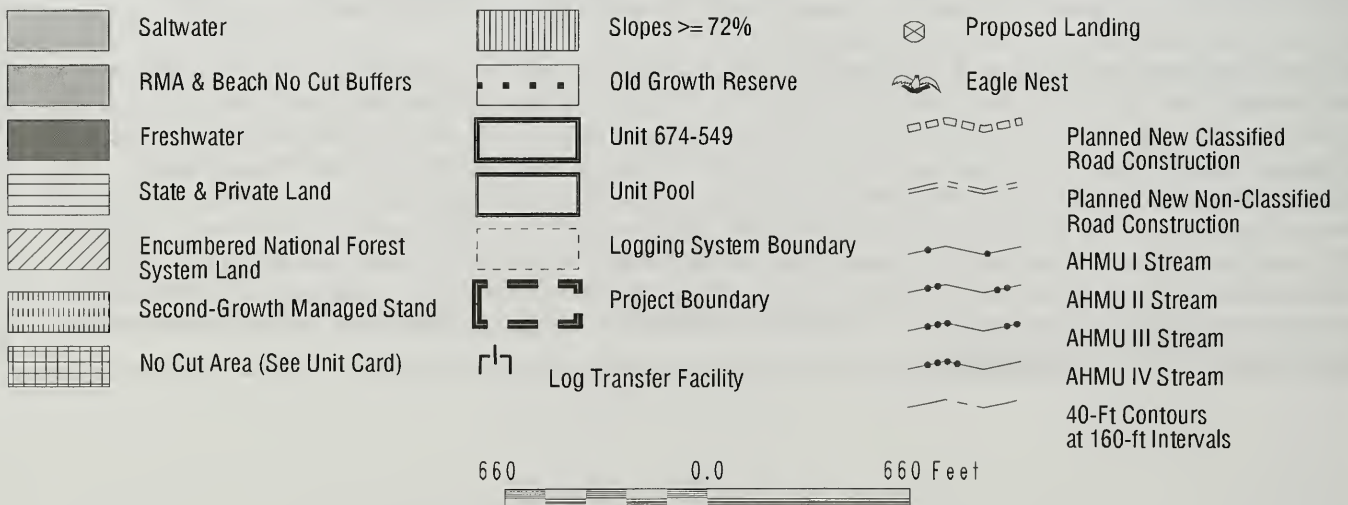
RECREATION (J. Kluwe): Unit is in proximity to recreation sites in the West Arm of Cholmondeley Sound. See visuals section for design comments related to the recreation setting, as viewed from West Arm. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.

PRESCRIPTION (G. Lawton): Potential for future entries when visually less sensitive however, may be uneconomical. Reserves for visual, marten and soils needs.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: clear-cut would leave non-merchantable trees and safe snags over the entire unit. This clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Helicopter logging system is anticipated on entire unit. Forest Plan requires up to 1 acre of structural retention for high value marten habitat. Structural acreage credit can be achieved through: presale efforts. This will visibly hide a portion of the unit behind it. From the backline into the unit 300', OSR trees >18" dbh, clear-cut the SE 1/2 of the unit, and from the 50' buffer to 300' from the backline. Future activities: regeneration surveys, harvest evaluation on non-clearcut portion, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Combination of full and partial suspension required for soil protection. Unit adjacent to 1000' buffer. ANY reduction in size in the layout phase will benefit visuals. See BMPs listed above.



CHOLMONDELEY ROD Unit 674-549



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-549 ACRES: 28 VOL: 500 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/590-67, 66 1/4 QUAD: ELEV. RANGE: 500-100 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: 000Z/ NAME/CAT#: ROAD#: None WINDTHROW RISK: moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F11, F15, F18, F21, T1, W7, W28, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 43, 50, and 51; Superstand Net Vol/ac=26,853; Windthrow risk- medium; Logging system Options- Helicopter;

Insects and Disease: Cedar dieback- high; Mistletoe low;

Site Productivity- 2; Average Site Index (50yr)- 100.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 50 to 80 percent gradient with an estimated 2 acres of slopes greater than 72 percent gradient identified as suitable. Rock outcrops and thin (<20 inches) thick organic soils require full suspension to prevent detrimental soil displacements (BMP 13.9). The upper reaches of two water quality streams occur in the unit. The streams are shallowly incised and bedrock controlled. Riparian areas are unmappable at a scale of 1:15,840 (BMP 12.6). See fisheries section for stream course protection measures (BMP 12.6a and 13.16). A beach buffer applies to the lower unit boundary. Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (J. Hannon)

Checked for streams only at saltwater, no fish streams identified. Low concern watershed for fisheries.

Unit contains three Class IV streams that flow together into a Class III below the unit. No buffers required in the unit.

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit observed by boat. High value marten habitat (2-4 acres) must be left in the eastern half of the unit. 2.8-5.6 acres will need to be retained in the unit. Unit is adjacent to both an old growth reserve and a 1000-foot beach buffer.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See Unit 674-537 discussion.

RECREATION (J. Kluwe): See visuals section for design comments related to the recreation setting, as viewed from West Arm.

PRESCRIPTION (G. Lawton): Potential for future entries when visually less sensitive, however may be uneconomical. Reserves for visual, marten and soils needs.

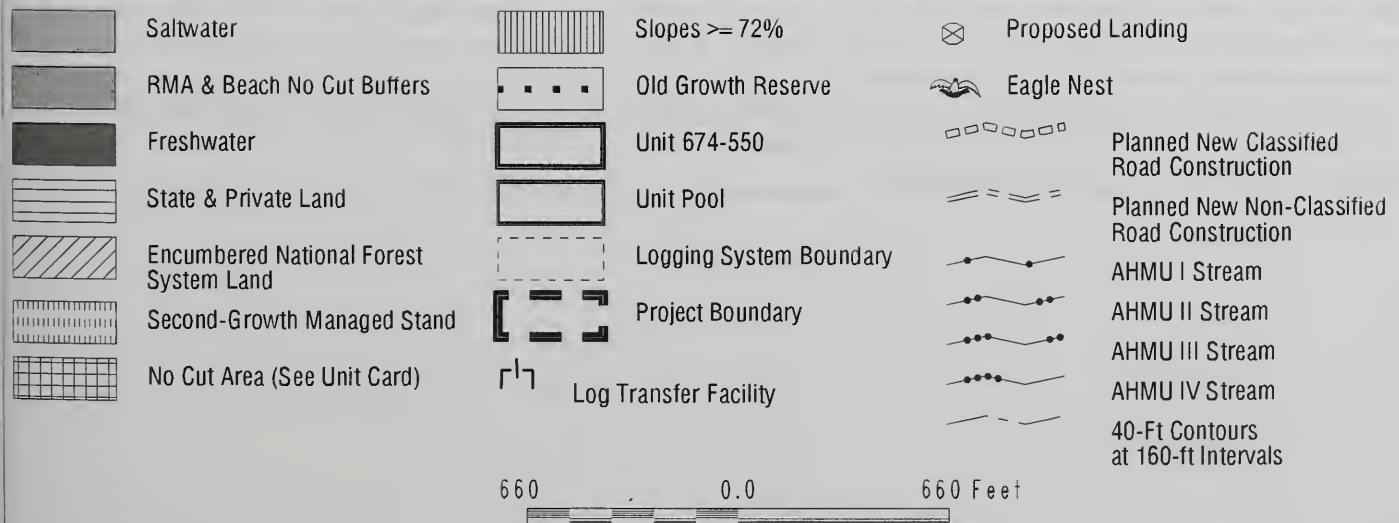
SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves and two-aged overstory removal: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging. Clear-cut would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Helicopter logging system on entire unit. Soils full suspension is required over the entire unit. Forest Plan requires 2-4 acres of structural retention for high value marten habitat. Structural acreage credit and VQOs can be achieved by: clear-cut upper 2/3 of unit, lower 1/3 OSR >22.0 DBH removes 50% of the BA and ~15% of the trees (few large trees). Structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 80 live trees >20" dbh and 60 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave. Future activities: regeneration surveys, harvest evaluation on non-clearcut portions, and precommercial thinning at 15 to 20 years. Full suspension required for soil protection. Unit adjacent to 1000' buffer. See BMPs listed above.



CHOLMONDELEY ROD Unit 674-550



West Arm



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-550 ACRES: 26 VOL: 612 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/590-67,66 1/4 QUAD: ELEV. RANGE: 400-800 ASPECT: S LOGGING SYSTEMS: HE

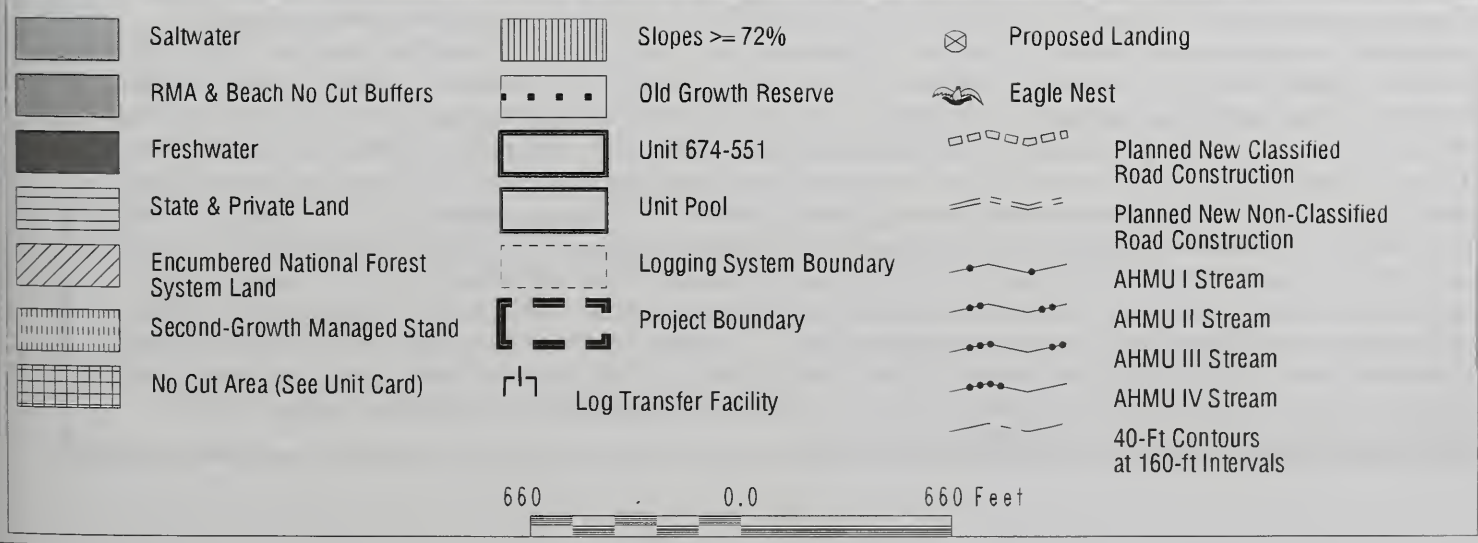
WATERSHED#: 000Z NAME/CAT#: ROAD#: None WINDTHROW RISK: moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F11, F18, F21, T1, W6, W7, W34, V1, V8,). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
SILVICULTURE/TIMBER (G. Lawton): Exam Stands- 19; Superstand Net Vol/ac= 53,935; (suspensions data) Regeneration System Options- CC, OSR; Windthrow risk- medium; Logging system Options- Helicopter; Site Productivity- 2; Average Site Index (50yr)- 100.
TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE
SOILS/WATERSHED (D. Landwehr): Slopes range from 50 to 90 percent gradient, with an estimated 4 acres of slopes greater than 72 percent gradient identified as suitable. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Soils are dominantly less than 20 inches thick over bedrock and well drained. Use full suspension to minimize impacts to the soils resource, including landsliding (BMPs 13.5 and 13.9). Two water quality streams have small riparian areas below the slope-break (BMP 12.6). See fisheries section for stream course protection measures (BMP 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.
FISHERIES (J. Hannon) Checked for streams only at saltwater, no fish streams identified. Low concern watershed for fisheries. Unit contains one Class III, one O/W Class IV and two G/W Class IV streams. Buffer the Class III stream with a slopebreak buffer. Split yard away from the O/W IV stream. No buffer required on the Class IV streams. BMP 12.6, 13.16
WILDLIFE (M. Dillman): Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit observed by boat. There is no high value marten habitat in the unit. 0.1-6.2 acres in the unit should be retained as a clear cut with reserves. Unit is adjacent to an old growth reserve and a 1000-foot beach buffer.
GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): This unit was surveyed by FS archaeologists during the 1997 field season. No cultural resources were noted. No further concerns. VISUALS (J. Short): See Unit 674-537 discussion. RECREATION (J. Kluwe): See visuals section for design comments related to the recreation setting, as viewed from West Arm. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.
PRESCRIPTION (G. Lawton): SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves and even-aged overstory <u>remove</u> ; retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging, to leave non-merchantable trees and safe snags over the entire unit. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Soils full suspension is required on entire unit. No high volume strata or marten habitat exists in unit. <u>For visual concerns: Clear-cut the center 1/2 of the unit even-aged overstory remove >25.0 DBH on the east and west thirds quarters of the unit. This removes ~63% of the BA and ~42% of the trees.</u> Future activities: regeneration surveys and harvest evaluation on non-clearcut portions. Unit adjacent to 1000' buffer. See BMPs listed above.



CHOLMONDELEY ROD Unit 674-551



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-551 ACRES: 34 VOL: 714 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: '91/590-66,67 1/4 QUAD: ELEV. RANGE: 500-800 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: 000Z/ NAME/CAT#: ROAD#: None WINDTHROW RISK: moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F3, F11, F15, F18, F21, T1, W6, W28, W34, V1, V8,). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 44 and 43; Superstand Net Vol/ac= 31,080;
Insects and Disease: n/a; Windthrow risk- medium; Logging system Options- Helicopter;
Regeneration System Options- n/a; Site Productivity- 2; Average Site Index (50yr)- 100.

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 50 to 80 percent gradient with an estimated 3 acres of slopes over 72 percent gradient identified as suitable. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Soils are typically less than 20 inches thick over bedrock and small cliffs are common. Use full suspension to minimize impacts to the soils resource, including landsliding (BMP 13.5 and 13.9). Two streams have identifiable riparian areas below the slope-break (BMP 12.6). See fisheries section for stream course protection measures (BMPs 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES: (J. Hannon) Checked for streams only at saltwater, no fish streams identified. Low concern watershed for fisheries. Unit contains one Class III and two Class IV streams. Buffer the Class III with a slopebreak buffer. No buffer required on the Class IV streams.
BMP 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit observed by boat. Marten habitat retention will to be located around the stream that runs through the middle of the unit. If this stream were being buffered for visual reasons with a 100 foot buffer strip, this would also count as marten habitat retention. Unit is adjacent to a 1000-foot beach buffer. Martin habitat requires 0.8-1.6 acres of retention.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See Unit 674-537 discussion.

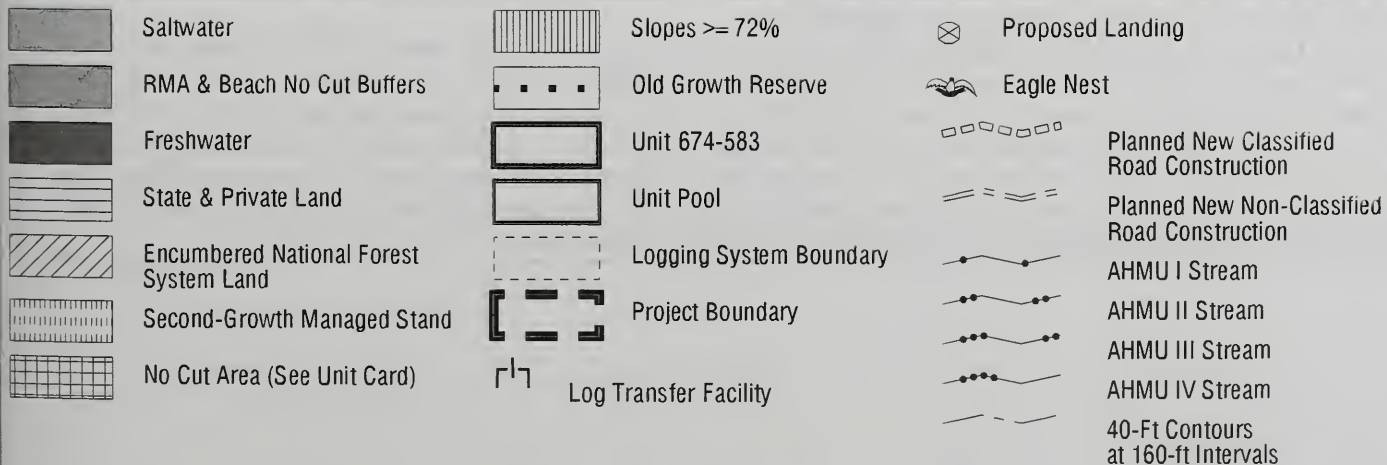
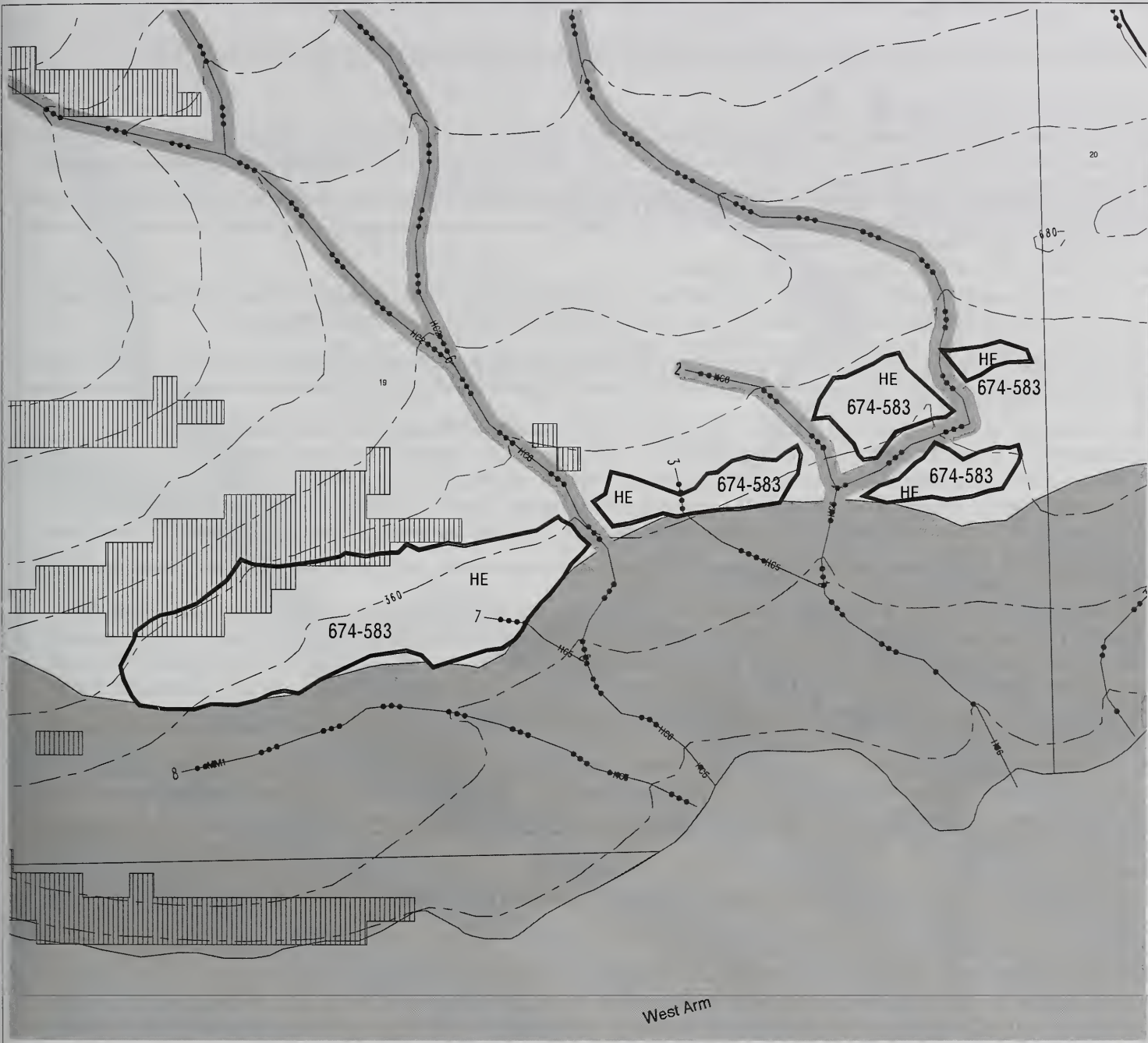
RECREATION (J. Kluwe): See visuals section for design comments related to the recreation setting, as viewed from West Arm

PRESCRIPTION: (G. Lawton): Reserves for visual, marten and soils needs.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves and even-aged overstory removal: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Clear-cut would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Soils full suspension is required on the eastern 2/3 of unit. Adjacent to 1000' beach buffer. Forest Plan requires 1-2 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved through: visual mitigation measures. Clear-cut the east and west 1/4s of the unit. Within the center third of the unit there needs to be retention of 0.8-.16 acres by buffering the stream with a 100-foot buffer, which will visually hide a portion of the upper unit. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 40 live trees >20"dbh and 30 snags >20"dbh (doms, codoms or GT 16" dbh) that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave. The center of the unit will be treated with an overstory removal of trees >21.0" DBH. This removes ~50% of the BA and ~13% of the trees (many small trees take up the growing space). Future activities: regeneration surveys and harvest evaluation on non-clearcut portions. Unit adjacent to old growth reserves). See BMPs listed above.



CHOLMONDELEY ROD Unit 674-583



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 674-583 ACRES: 26 VOL: 666 MBF ALTERNATIVES: 2,3,5,6,7

PHOTO YR/#: 91/390-20 1/4 QUAD: ELEV. RANGE: 200-400 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: F23A, F24A, F25A, CV1A NAME/CAT#: Westest, 2nd Westest, 3rd Westest ROAD#: None

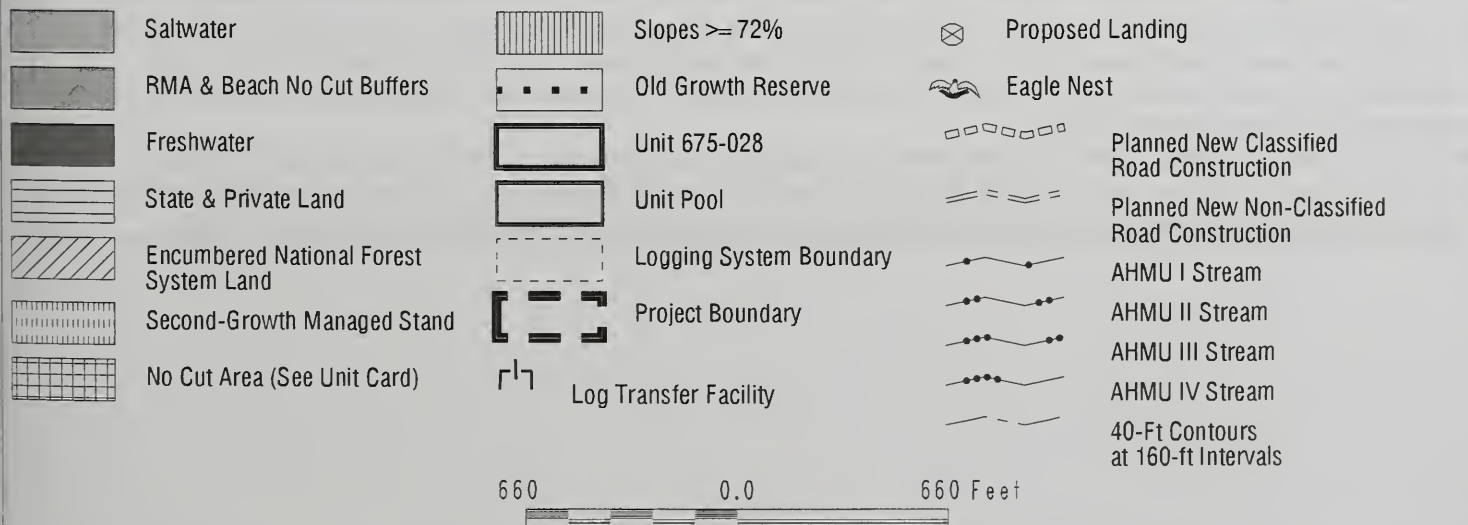
WINDTHROW RISK: moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F18, F21, W1, W6, W7, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
<p>SILVICULTURE/TIMBER (G. Lawton):</p> <p>Exam Stands- 30 and 19; Superstand Net Vol/ac= 32,270;</p> <p>Insects and Disease: Mistletoe- high and Rot- medium; Downhill Yarding- >50%; Windthrow risk- medium; Logging system Options- Helicopter; Regeneration System Options- Clearcut type-D and Group Selection;</p> <p>Site Productivity- 2-H; Average Site Index (50yr)- 100.</p>
<p>TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE</p>
<p>SOILS/WATERSHED (D. Landwehr):</p> <p>Slopes range from 30 to 70 percent gradient. No slopes over 72 percent were identified. Was modified following reconnaissance to avoid landslide prone soils (BMP 13.2). The unit is a complex of forested uplands and forested wetlands. Use a minimum of partial suspension to control impacts to soil and wetland resources (BMP 12.5 and 13.9). Three water quality streams have identifiable riparian areas below the slope-break (BMP 12.6). The riparian areas will be entirely within the slope-break buffers. (BMP 12.6a). See the fisheries section for stream course protection measures (BMP 12.6a and 13.16).</p>
<p>FISHERIES (J. Hannon)</p> <p>Streams field checked only at saltwater. Western stream is small with no fish observed. Second stream from west has potential pink salmon spawning in the intertidal zone and then a 25% gradient and 3m BFW. The eastern stream coming from the unit has potential pink spawning in the intertidal zone (3m BFW). A 10' falls is about 100' upstream. These are low concern watersheds for fisheries. Unit contains three Class III and two Class IV streams. Leave a slopebreak buffer on the Class III streams. No buffer required on the Class IV streams. BMPs 12.6, 13.16</p>
<p>WILDLIFE (M. Dillman):</p> <p>Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit observed by boat. There is no high value marten habitat in the unit. 10-20% (3-6 acres) of the unit should be retained for the type of clearcut. The unit is adjacent to an old growth reserve and a 1000-foot beach buffer.</p>
<p>GEOLOGY/MINERALS:</p> <p>LANDS: No concerns.</p> <p>CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.</p> <p>VISUALS (J. Short): See Unit 674-537 discussion.</p> <p>RECREATION (J. Kluwe): Unit is in proximity to recreation sites in the West Arm of Cholmondeley Sound. See visuals section for design comments related to the recreation setting, as viewed from West Arm. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.</p>
<p>PRESCRIPTION: (G. Lawton) (Reserves for visual needs.)</p> <p>SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging, would leave non-merchantable trees and safe snags over the entire unit. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Adjacent to 1000' beach buffer. No high volume strata exist in unit. Previously deleted acres due to high MMI. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Partial suspension required for soil protection. See BMPs listed above.</p>



CHOLMONDELEY ROD Unit 675-028



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-028 ACRES: 16 VOL: 216 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/590-133 1/4 QUAD: ELEV. RANGE: 300-600 ASPECT: SW LOGGING SYSTEMS: RS

WATERSHED#: F28A NAME/CAT#: DRINKING WATER ROAD#: 2170000-1 WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F6, F11, F18, F20, F21, W1, W6, W7, W28, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 41; Superstand Net Vol/ac= 19,457 (too high volume - poor quality, data suspect); LOW VOLUME

Insects and Disease: Cedar dieback- high;

Downhill Yarding- 33%; Windthrow risk-low; Logging system Options- Running Skyline;

Site Productivity- 5; Average Site Index (50yr)- 50;

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes in most of the unit range from 40 to 72 percent gradient. Unit 028 was modified following reconnaissance and preliminary layout to avoid cliffs and unsuitable and unstable areas (BMP 13.5). Field reconnaissance has determined that GIS mapping is overstated in its depiction of overstep area. About 5 acres of the unit classify as forested wetlands. Boulders and thin (<20 inches thick) organic soils over bedrock occur in the northern portion of the unit. These thin soils are susceptible to detrimental soil displacements. Use partial suspension to keep impacts to the soil and wetland resources within standards. (BMPs 12.5, 13.5, and 13.9). One stream has an identifiable riparian area below the slope-break. (BMP 12.6). The riparian area will be entirely within the no-cut buffer. (BMP 12.6a). Leave an expanded buffer on the stream to minimize impacts to the domestic water users downstream. BMPs 12.6a, 13.2 and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards See the soils report for details.

FISHERIES (J. Hannon)

Stream #2 (numbering continued from unit 27): Class II, Flagging BW, C-type MC1 A 100' windfirm buffer is required on this stream. The stream was not walked along the unit but fish were found upstream of the unit.

Stream# 5 Class III Flagging OW C-type HC2/5 A 100' buffer is required on this stream to protect the domestic water use downstream. We walked to 400' and incision increases further upstream. We did not check the unit for streams west of this one. No other streams are mapped.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman): Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. It is poor goshawk habitat. The acreage retained for high value marten habitat needs to be located in either the southern half of the unit, in the northern portion of the unit or along the upper backline north of Stream #5. Pacific yew trees were located within the unit boundary along the planned road line. The Pacific Yew Act of 1992, sustainability should be provided for. Site specific prescriptions will ensure propagation of the species during initial harvest and through future stand treatments. High value marten habitat retains 1.3-2.0 with a minimum of 91 retention trees.

GEOLOGY/MINERALS: LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns

VISUALS (J. Short): Units 675-030, 029, 028, and 676-472, 462, 482, 489, 592 are all in the middle ground as seen from just outside the mouth of Sunny Cove. They are all visible to one degree or another. The adopted VQO for this middleground area is modification. The adopted VQO for this middle ground area is modification. The size and separation of the units and the retention left in some of these units for other resource concerns will result in this group of units meeting the modification VQO.

RECREATION (J. Kluwe): Unit is located above the community in Sunny Cove. See visuals section for design comments related to the recreation setting, as viewed from the mouth of Sunny Cove. Timing harvest/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.

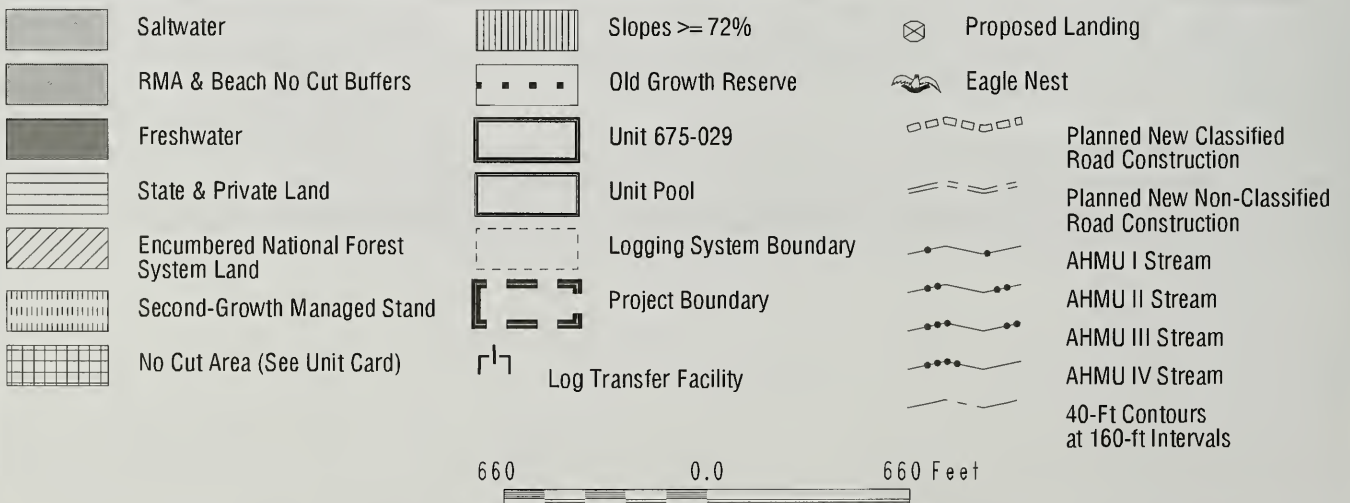
PRESCRIPTION (G. Lawton): Anticipate one-entry only within the unit boundary. Reserves for visual needs
SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut to call for a specified number of snags and live replacements, seven trees per acre >20" diameter limits retained in 50 to 100 feet of the border (see below). Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is required. Yarding system difficulties due to: large rock outcrops and poor volume, very steep ground and McGilvery 40% of unit (Source: old rates). Requires 1-2 acres of structural retention for high value marten habitat. Structural acreage credit can be achieved through: 2 acres of buffers on Stream #5 (Class III or IV), and 20' additional RAW on center stream. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 52 live trees >20" dbh and 39 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave.

Maintain setting width between adjacent units. Not visited by silviculturist. R.S. logging system is anticipated on entire unit. Future activities: regeneration surveys and precommercial thinning at 25+ years. Partial suspension required for soil protection (field review needed during layout). Unit near but not adjacent to 1000' buffer.

PROTECT POTENTIAL DOMESTIC WATER STREAMS #2 AND #5. See Fisheries section. Additional mitigation for activities upstream of domestic water users include (F20): increased buffers mentioned above, fuel storage, refueling and maintenance will occur outside watershed when possible, timing of road construction to avoid extremely wet periods, rock pit development outside of watershed, silt fencing, use of log stringer bridges, and prevent contamination from oil spills. See BMPs listed above. See also the road card for the 2170000-1 road.



CHOLMONDELEY ROD Unit 675-029



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-029 ACRES: 13 VOL: 187.2 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR#: 91/490-134.3 1/4 QUAD: ELEV. RANGE: 600-800 ASPECT: SE LOGGING SYSTEMS: RS
WATERSHED#: F28A NAME/CAT#: Drinking Water ROAD#: 2170000-2 WINDTHROW RISK: Low
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F6, F11, F18, F20, F21, W1, W7, W20, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 46; Superstand Net Vol/ac= 15,627;
Downhill Yarding- 66%; Windthrow risk- medium; Logging system Options- Running Skyline;
Regeneration System Options- CC-B;
Site Productivity- 4; Average Site Index (50yr)- 80. Not visited by Silviculturist.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr): Slopes range from 50 to 70 percent gradient. The southeast half of the unit classifies as forested wetlands. Thin (<20 inches thick) organic soils over bedrock occur in the northwestern half of the unit. Use a minimum of partial suspension to keep detrimental impacts to soil and wetland resources within standards. (BMP 12.5 and 13.9) There are no identifiable riparian areas associated with Stream 1 adjacent to the unit (BMP 12.6). See fisheries section for specific stream course protection measures (BMP 13.16). In the watershed that contributes to a domestic water supply, however the stream adjacent to the unit is very small, and a pond, just downstream would settle out heavier soil materials generated by harvest. An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards See the soils report for details. Field reconnaissance verified that GIS mapping of the steep slope portion is depicted as too large and is actually outside of the unit.

FISHERIES (J. Hannon)

Stream# 1 Class IIA Flagging BW C-type HC1 100' TTRA buffer required. Dolly Varden present. We flagged from 460' to 560' elevation.

Stream # 2 Class IV Flagging G/W C-type HC5 no buffer required.

Lake: Class IIA. 100' TTRA buffer required. The lake is simply a wide spot in Stream #1.

BMPs 12.6, 13.16

WILDLIFE: (M. Dillman) Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit is a western hemlock/western red cedar/blueberry/salal plant association . It is recommended that during unit layout the southern unit boundary be kept upslope from the low productivity areas and that the streams leading into them remain undisturbed. No high volume strata exist in the unit to leave for marten.

GEOLOGY/MINERALS

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See 675-028 discussion.

RECREATION (J. Kluwe): Unit is located above the community in Sunny Cove. See visuals section for design comments related to the recreation setting, as viewed from the mouth of Sunny Cove.

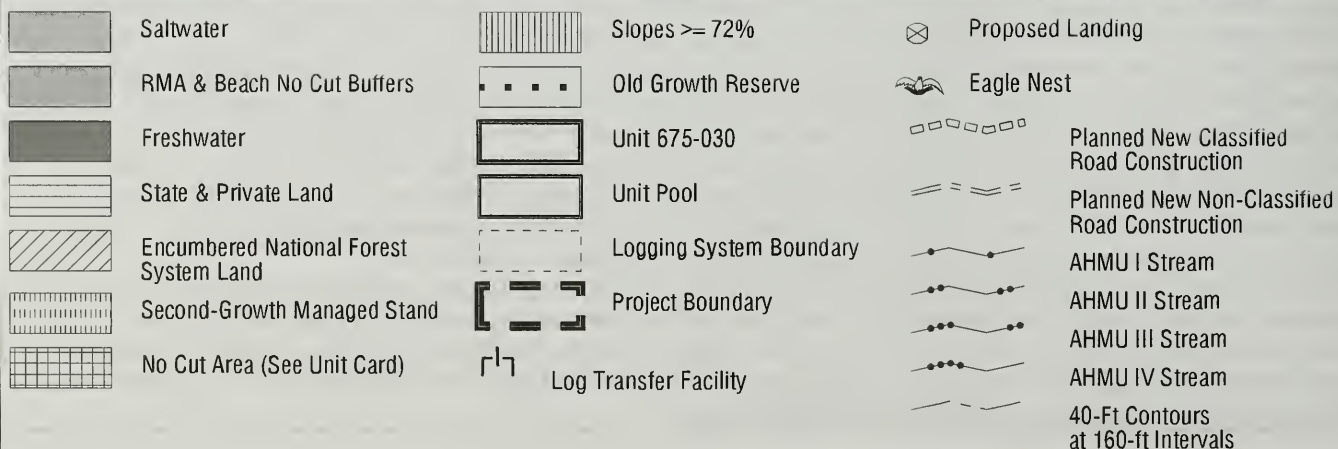
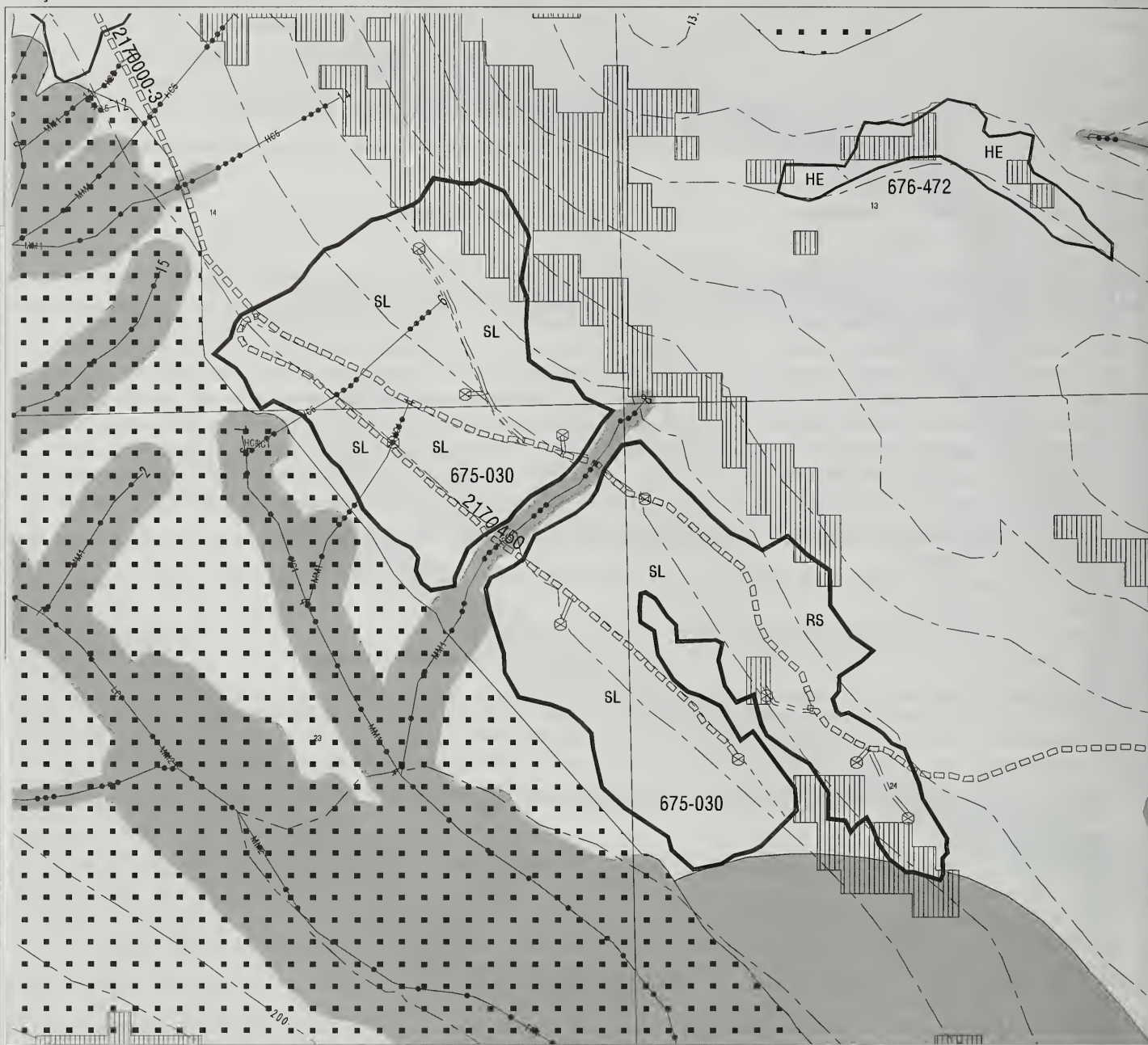
PRESCRIPTION (G. Lawton): Reserves retained for visual and soils concerns.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut calls for a specified number of snags and live replacements with minimum of 16" diameter limits retained within 200 feet of the border, (seven large trees). Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is required. Leave reserve trees only along upper backline for visual mitigation. Trees shall be left in alternating cut/leave corridors extending into the unit 200 feet from the backline. No high volume strata or marten habitat exists in unit. Soils partial suspension is required on the west end. RS or SL logging systems are anticipated on entire unit, 66% downhill yarding. Maintain setting/area width between units. Approximately 1/2 of the original units retained on the edges for structure. . Anticipate falldown of volume due to low volume. Future activities: regeneration surveys, release, and precommercial thinning at 25+ years. Partial suspension required for soil protection. Unit near but not adjacent to 1000' buffer.

PROTECT POTENTIAL DOMESTIC WATER STREAM #1. See Fisheries section. Additional mitigation for activities upstream of domestic water users include (F20): increased buffers mentioned above, fuel storage, refueling and maintenance will occur outside watershed when possible, timing of road construction to avoid extremely wet periods, rock pit development outside of watershed, silt fencing, use of bridges, and prevent contamination from oil spills. See BMPs listed above. See the road card for the 2170000-2 road.



CHOLMONDELEY ROD Unit 675-030



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-030 ACRES: 67 VOL: 1876 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/590-18,19 1/4 QUAD: ELEV. RANGE: 200-600 ASPECT: SW LOGGING SYSTEMS: RS, SL

WATERSHED#: F27A NAME/CAT#: SUNNY/102-40-87 ROAD#: 2170000-2 WINDTHROW RISK: Moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W7, W28, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton):

Exam Stands- 27, 28, and 46; Superstand Net Vol/ac= 35,337; Windthrow risk- medium
Insects and Disease: Moderate CD Rot, Mistletoe, Fluting;
Logging system Options-Running Skyline and Live Skyline;
Site Productivity- 4; Average Site Index (50yr) - 80.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr):

Slopes range from 30 to 80 percent gradient in unit 030 with approximately one acre of slopes over 72 percent gradient in the southeast portion of the unit identified as suitable. The unit includes approximately 24 acres of forested wetland/upland complex. Use a combination of partial and full suspension to keep impacts to the soil and wetlands resources within standards. (BMP 13.5, 13.9 and 12.5). There is a floodplain and estuary riparian area southwest of the unit and one water quality stream has a slope-break riparian area (BMP 12.6). The riparian areas are entirely within the no-cut buffers (BMP 12.6 and 13.16). See fisheries section for stream course protection measures (BMPS 12.6a and 13.16). Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (S. Farzan):

Stream# 2 Class I Flagging: BW C-type MM1. A 120' no-cut buffer

Stream# 4 Class I/IV Flagging: BW/GW C-type HCI Class I portion: 100' no cut buffer. Class IV portion: No buffer required.

Stream# 5 Class I Flagging BW C-type HC1 A 100' no cut buffer.

Stream# 6 Class I/IV Flagging: BW/GW C-type HC1/HC5 Class I portion: 100' no cut buffer. Class IV portion: No buffer required.

Stream# 8 Class III Flagging O/W C-type HC5 Slope break buffer plus 50' on the east and 25' on the west for windfirmness.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman):

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit has an open understory. The retention of 6 acres for high value marten habitat will need to be located in the northwestern 2/3 roads of the unit (except along the upper boundary between the Class III Stream #8 and Class IV Stream #6). Acres needed for 10% deferral is 6.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See 675-028 discussion.

RECREATION (J. Kluwe): Unit is located above the community in Sunny Cove. See visuals section for design comments related to the recreation setting, as viewed from the mouth of Sunny Cove.

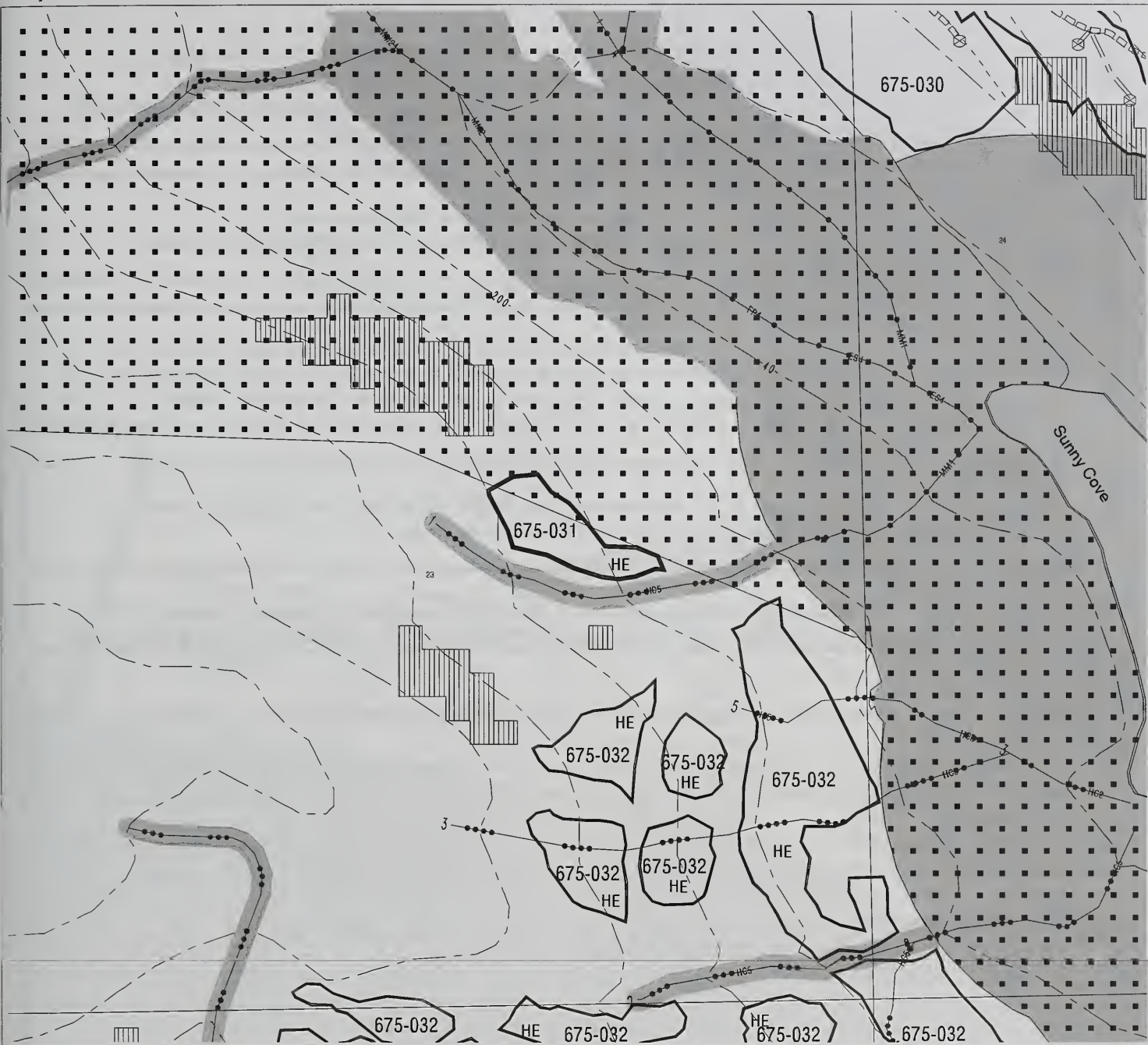
PRESCRIPTION: (G. Lawton.): Reserves for marten needs.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves. Clear-cut calls for a specified number of snags and live replacements with 20" diameter limit retained in 50 to 100 feet of the border seven large, live trees/Ac. Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is required. Soils partial and full suspension is required on the band through center of unit.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCU's where <33% of existing POG has been converted to young growth stands. These apply only to the western 2/3 of the unit. They require 6 acres of structural retention for high value marten habitat credited in: near center cliffs, along southern and northern boundary lines and in buffers along streams. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 216 live trees >20" dbh and 162 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave.

Unit adjacent to estuary buffer. Future activities: regeneration surveys, harvest evaluation on non-clearcut portions, release, and precommercial thinning at 15 to 20 years. Unit adjacent to 1000' buffer. Group Selection and stream buffers cover RAW needs. See BMPs listed above.

CHOLMONDELEY ROD Unit 675-031



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Second-Growth Managed Stand

No Cut Area (See Unit Card)



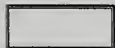
Slopes $\geq 72\%$



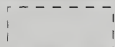
Old Growth Reserve



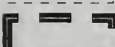
Unit 675-031



Unit Pool



Logging System Boundary



Project Boundary



Log Transfer Facility



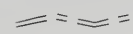
Proposed Landing



Eagle Nest



Planned New Classified Road Construction



Planned New Non-Classified Road Construction



AHMU I Stream



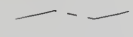
AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

660

0.0

660 Feet

CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-031 ACRES: 3 VOL: 38 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/590-19,20 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: NE LOGGING SYSTEMS: HE

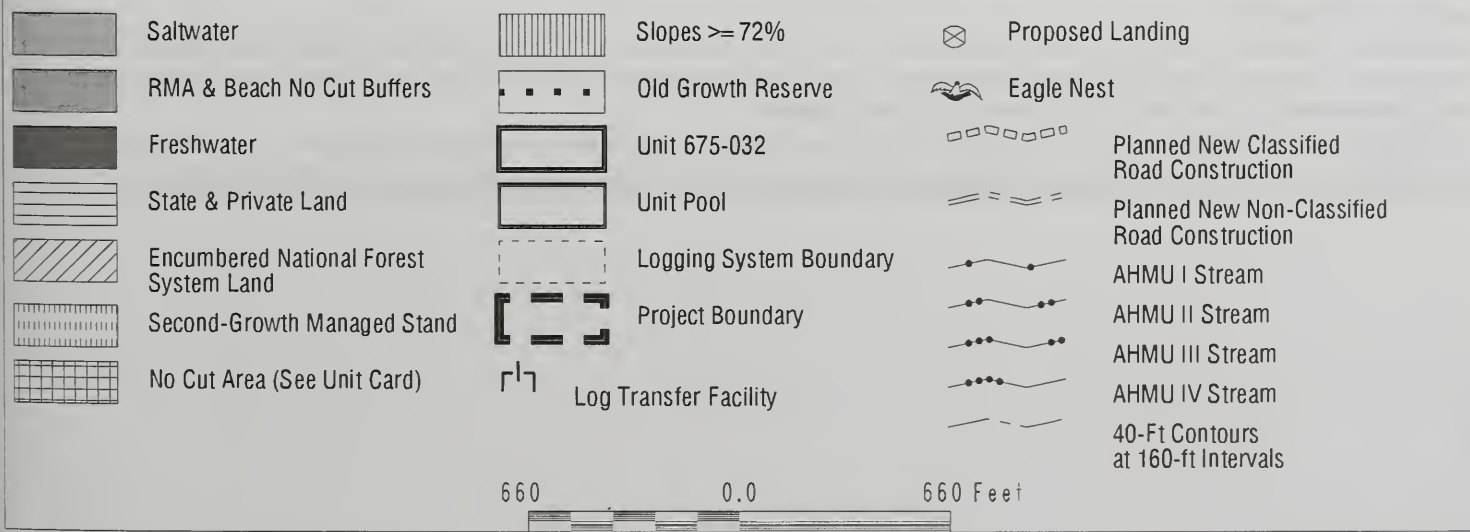
WATERSHED#: 000Z/85 NAME/CAT#: 102-40-85 ROAD#: None WINDTHROW RISK: Moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F18, F21, W1, W7, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
SILVICULTURE/TIMBER (G. Lawton) Exam Stands- 19; Superstand Net Vol/ac= 12,180; Insects and Disease: Low Mistletoe and C.D; Downhill Yarding- 100%; Windthrow risk- medium; Logging system Options- Running Skyline, helicopter; Site Productivity- 4; Average Site Index (50yr)- 80
TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE
SOILS/WATERSHED (D. Landwehr) Slopes range from 30 to 50 percent gradient. Slopes less than 45 percent gradient support forested wetlands. Use partial suspension to minimize impacts to soil and wetland resources (BMP 12.5 and 13.9). Stream buffers apply to the eastern boundary. (BMP 13.2). One water quality stream has a riparian area below the slope-break. (BMP 12.6). The riparian area will be entirely within the no-cut buffer. (BMP 12.6a and 13.16). See fisheries section for stream course protection measures. (BMPs 12.6a and 13.16).
FISHERIES (J. Hannon) Stream# <u>1</u> Class <u>III</u> Flagging <u>OW</u> C-type <u>HC5</u> Recommend slopebreak buffer with some additional trees recommended for windfirmness. The stream flows into Sunny Creek in the estuary. BMPs 12.6, 13.16
WILDLIFE (M. Dillman) Wildlife did not visit this unit. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat in the unit. Unit is adjacent to an old growth reserve.
GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns. VISUALS (J. Short): This unit in foreground as seen from Sunny Cove. Objective is Partial Retention. This helicopter unit, because of its small scale and some structure being left due to retention of non-merchantable trees, will meet visual objectives. RECREATION (J. Kluwe): Unit is located west of Sunny Cove, opposite the community, and above and inventoried recreation site. See visuals section for design comments related to the recreation setting, as viewed from Sunny Cove. Timing harvesting/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the Sunny Cove area.
PRESCRIPTION (G. Lawton) One entry anticipated. Reserves for visuals. SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use: clear-cut would leave non-merchantable trees and safe snags over the entire unit. This clearcut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Soils partial suspension is required on all of unit. No high volume strata or marten habitat exists in unit. Feather upper boundary for visual view from residences. Leaving a few extra trees as windfirm buffer on stream will help visuals concerns. If unit is expanded, more trees will have to be retained. Future activities: regeneration surveys, release, and precommercial thinning at 25+ years. Unit adjacent to 1000' buffer. Add 20' RAW buffer on stream. Road has been dropped across Sunny Creek. See BMPs listed above.



CHOLMONDELEY ROD Unit 675-032



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-032 ACRES: 42 VOL: 1146 MBF ALTERNATIVES: 2,3,5,6

PHOTO YR/#: 91/590-19,20 1/4 QUAD: ELEV. RANGE: 400-600 ASPECT: NE LOGGING SYSTEMS: HE

WATERSHED#: 000Z NAME/CAT#: ROAD#: None WINDTHROW RISK: High

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, K1, F11, F18, F21, W1, W7, W28, W34, V1, and V8). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- 42 and 19; Superstand Net Vol/ac= 34,292; Insects and Disease: Mistletoe- high and Rot- medium; Downhill Yarding- ; Windthrow risk- high; Logging system Options- Helicopter, and Slackline Skyline; Regeneration System Options- Clearcut type-D and Group Selection; Site Productivity- 2-H; Average Site Index (50yr)- 100.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 30 to 70 percent gradient in unit 032. Approximately half of the proposed unit classifies as forested wetlands. Low and moderate vulnerability karst occurs in the southeastern half of the unit. Use partial suspension to keep impacts to soil and wetland resources within standards. Helicopter yarding may be necessary to protect karst resources. (BMPs 12.5, 13.5 and 13.9). Three small water quality streams have identifiable riparian areas below the slope-break (BMP 12.6). The riparian areas will likely be within the slope-break buffers (BMP 12.6a and 13.16). See fisheries section for stream course protection measures.

FISHERIES (J. Hannon)

The unit was not visited by fisheries. Evaluate any streams during layout and protect appropriately. These are low concern watersheds for fisheries.

One Class III (Stream #2) and three Class IV (Stream # 1, 3, and 5) streams flow through the unit. Buffer the Class III stream with a slopebreak buffer. The patch cut should add windfirmness. No buffer required on the Class IV streams. BMP 12.6, 13.16

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Unit observed by boat. High value marten habitat retention, (1.6-3.2 acres), will need to be located in the southeastern corner of the unit, or starting on the east boundary at Stream #0 and gradually working towards the southwestern corner of the unit. Unit is adjacent to 1,000-foot beach buffer.

GEOLOGY/MINERALS: (J. Baichtal): The southernmost eight group selections and the clearcut are underlain by marble in which karst drainage systems have developed. Soils tend to be a mosaic of shallow organic and residual soils. Karst features (sinkholes taking small streams from upslope) and steep carbonate cliffs were identified along the geologic contact between the phyllite found above the unit and the marble. The group selections have been designed to avoid the karst features, losing streams, and cliff areas. The remainder of the harvest unit was found to be moderate vulnerability karst. If the inventory missed any karst features, the group selections should be designed to avoid these features as per the requirements of Forest Plan Karst and Cave Resources Standards and Guidelines. Partial suspension is required throughout the entire harvest unit. Full suspension will be achieved via helicopter yarding.

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): Unit 675-032 in foreground view. Therefore adopted VQO is also partial retention. Recommend that upper steeper portions of this unit be partial cut, using individual tree or group selection so that a forested texture is still predominant and harvest in these sections is not apparent.

RECREATION (J. Kluwe): Unit is located west of Sunny Cove, opposite the community, and above an inventoried recreation site. See visuals section for design comments related to the recreation setting, as viewed from Sunny Cove.

PRESCRIPTION (G. Lawton): Future entries would be limited to one-entry proposal this rotation. Reserves for visuals, soils and marten needs will not be harvested until regenerated portions are large enough for commercial entry. **SILVICULTURAL SYSTEM FOR THE ROD:** Even-aged clear-cut with reserves. Soils partial suspension is required.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCUs where <33% of existing POG has been converted to young growth stands. These apply only to the western 2/3 of the unit. They require 1.6-3.2 acres of structural retention for high value marten habitat credited in: deleted acres due to high MMI, Karst and McGilvery soils, and stream corridors. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 136 live trees >20"dbh and 102 snags >20"dbh that need to be retained. These should be available in the leave areas /buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave.

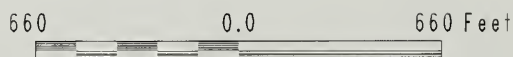
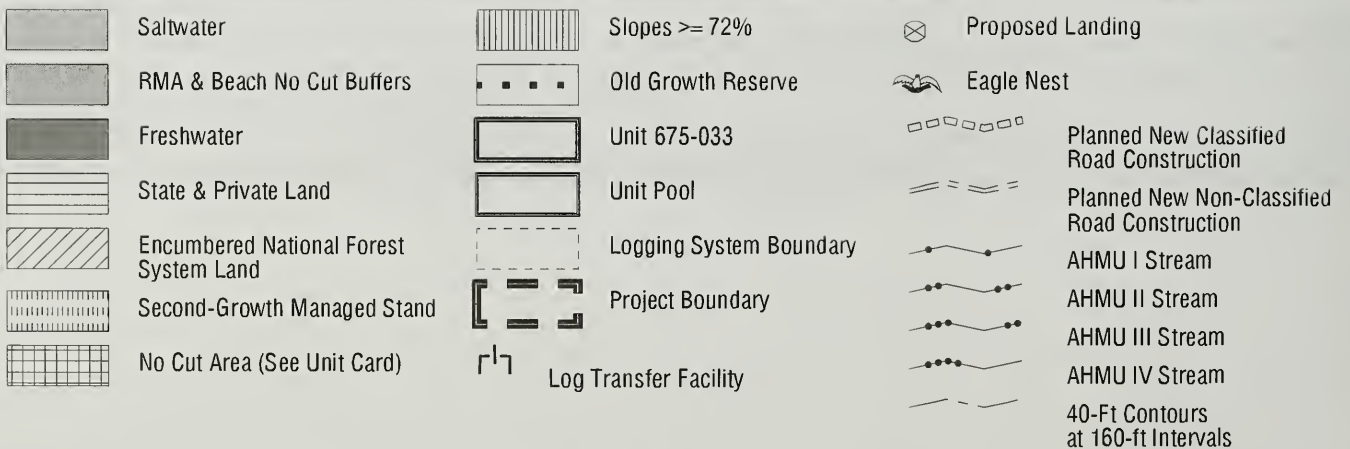
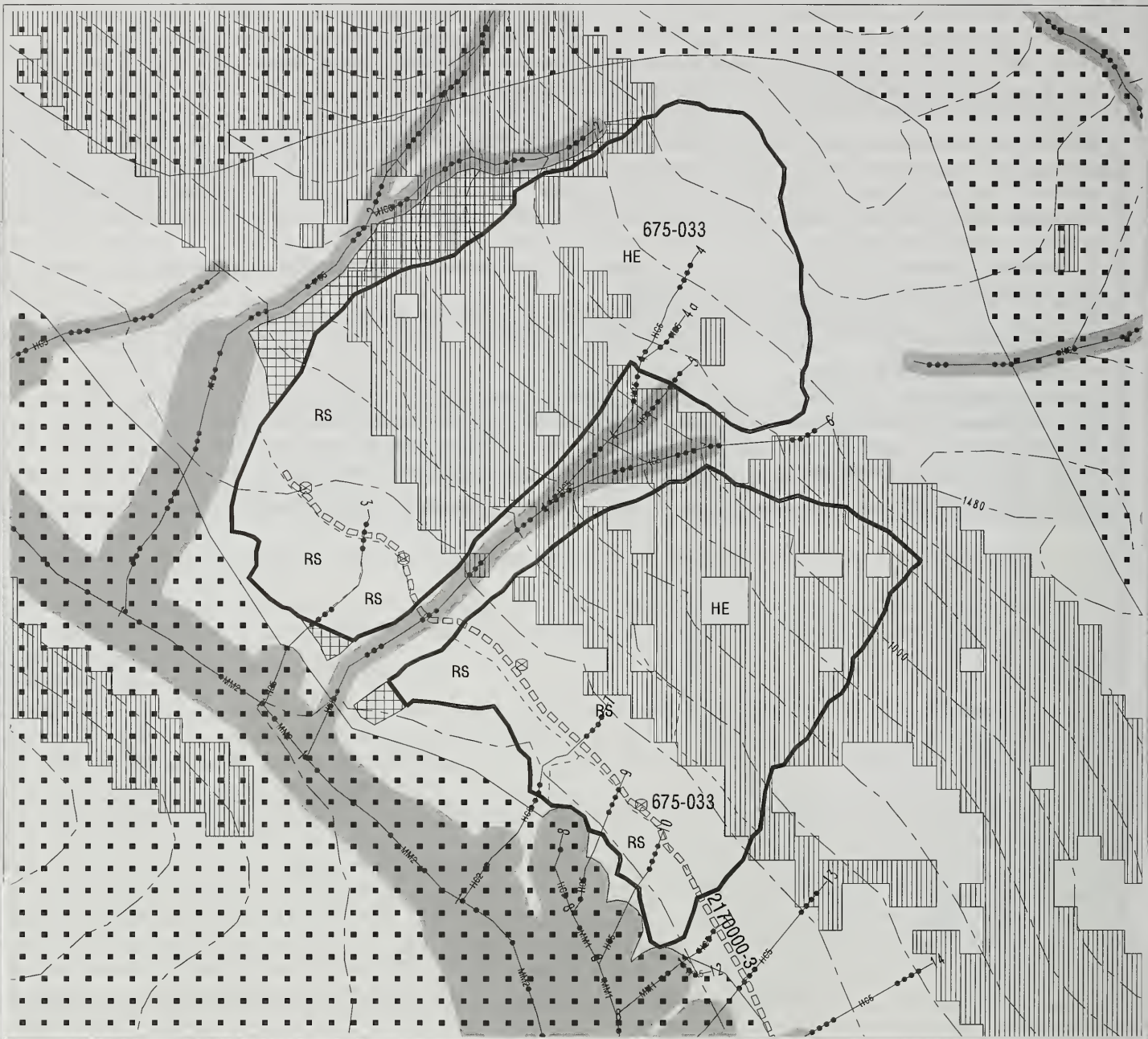
Visual concerns ask for >50% retention on the steeper portions of the unit. Complications include large trees, steep slopes with high MMI soils and high windthrow risk.

Below the center of unit use clear-cut, which would leave non-merchantable trees and safe snags over the entire unit. This clearcut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact.

Use even-aged clearcut of 1-2 acres in size; result in 50% of the area above the center of the unit containing harvest (50% retention). The lower half of the unit can be a larger even-aged clearcut with reserves. Future activities: regeneration surveys, harvest evaluation on non-clearcut portions, release, and precommercial thinning at 15 to 20 years. Unit adjacent to 1000' buffer. Road across Sunny Creek dropped due to many resource and public concerns. See BMPs listed above.



CHOLMONDELEY ROD Unit 675-033



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-033 ACRES: 105 VOL: 3786 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/590-18,17 1/4 QUAD: ELEV. RANGE: 200-1500 ASPECT: SW LOGGING SYSTEMS: HE, RS, SL

WATERSHED#: F27A NAME/CAT#: SUNNY/102-40-87 ROAD#: 2170000-3 WINDTHROW RISK: High

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F1, F18, F21, T1, W1, W7, W28, W34, and V1). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- 30, 47, and 12; Superstand Net Vol/ac= 42,391; Insects and Disease: Cedar dieback- high; Downhill Yarding- 90%; Windthrow risk- high; Logging system Options- Helicopter, and Running Skyline; Regeneration System Options- CC; Site Productivity- 2/4; Average Site Index (50yr) - 100/80.

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 40 to 100 percent gradient with an estimated 18 acres of suitable ground for logging contained within an area of slopes over 72 percent gradient. Unit 033 was modified following Soil Scientist reconnaissance to exclude areas unsuitable for timber harvest (BMP 13.5). Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. Use a combination of partial suspension and full suspension, and strategically placed no harvest areas to minimize impacts to soils, especially from landsliding (BMPs 13.2, 13.5, 13.9). A rationale for timber harvest on slopes over 72 percent is included in the Soils Resource Report. There is a large colluvial/alluvial fan riparian area in the northwest corner of the unit. There are two streams with identifiable riparian areas below the slope-break. (BMP 12.6). The riparian areas will be entirely within the buffers (BMPs 12.6a and 13.16). See fisheries section for stream course protection measures (BMPs 12.6a and 13.16). Windthrow potential is high in the unit and the reasonable assurance of windfirmness zone needs to reflect the increased probability for windthrow. (BMPs 13.2, 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards. See the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES (S. Farzan)

Stream# 1-Sunny Creek Class I Flagging BW C-type MM2 A 300' no cut buffer is recommended along the eastern 2/3 of the unit and 200' along the west end of the unit--roughly the 250' elevation line for the lower unit boundary. An additional approximately 100' of partial cut along the buffer is recommended for windfirmness of the stream buffer.

Stream# 2 Class III Flagging OW C-type AF2/HC6 A 140' buffer from the active channel is required on the AF2 portion (up to about 560' elevation). The HC6 portion requires a slopebreak buffer. An additional one tree height buffer (~100') is recommended past the slopebreak for future woody debris recruitment in the stream.

Stream# 3 Class I/IV Flagging BW/GW C-type HC5 Class I portion is within Sunny Creek buffer. Class IV portion is within an unstable area--looks like an old slump. No buffer on Class IV portion.

Stream# 4 Class III/IV Flagging OW C-type HC5 Recommend slopebreak buffer to top of Class III at 900' elevation.

Stream # 4A Class IV Flagging G/W C-type HC5. No buffer required.

Stream# 5 Class IV Flagging GW C-type HC5 Flows into #4 at 900' elevation.

Stream# 6 Class III Flagging OW C-type HC5 Flows together with #4 at 700' elevation. No flow when reviewed but recommend slopebreak buffer due to incision.

Stream# 7 Class I/IV Flagging BW/GW C-type HC2/5 Class I/IV break is about 100' out from Sunny Creek (buffer Class I 100'). Flagged to 450' elevation.

Stream# 8 Class I Flagging BW C-type HC2 Class I for about 500' along the stream from Sunny Creek (100' buffer). It may need to be Class IV above--evaluate during layout.

Stream# 9 Class I Flagging BW/GW C-type HC2/5 Class I buffer 100', no buffer on Class IV--stream might not reach the unit.

Stream# 10 Class IV Flagging GW C-type HC5 flows into #9, flagged and tagged at 150' elevation at #9 intersection. Stream is Class I B/W at intersection with #9.

Stream# 11 Class I/IV Flagging BW/GW C-type HC5 Class I to intersection w/#12, 100' buffer, A slide is at the top of the stream and the tag at the top of the slide says Stream #12 at 350' elevation.

Streams 12-15 are also flagged but are probably east of the unit boundary, see fish reports for details.

Coho and steelhead timing will be needed for road construction across Class III streams.

BMPs 12.6, 13.16, 14.6, 13.5

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. Plucked feathers from a varied thrush were found just beyond call station #2. Unit has an open understory and is fairly good goshawk habitat. Unit is a western hemlock/western red cedar/blueberry and western hemlock/blueberry plant associations. The acreage retained for high value marten habitat can be left anywhere in the unit except the extreme northeastern corner or small are in the southeast corner. Wildlife would prefer that the retention be located as an extension of the buffer on Sunny Creek. There are two small areas of grassy bogs in the lower part of the unit that could be wildlife leave areas. The first area is located just to the south and east of Stream #7 and the second is approximately centered on Stream #3 and extends to both the northwest and southeast. The stream buffer on both of these streams could be enlarged to encompass these wetland areas and it would count towards the acreage needed to meet the requirement for marten habitat. The area between Streams #4 and #6 at 700 to 1300 feet in elevation will credit towards marten habitat (5 acres). 8-20 more acres of high value marten habitat still need to be identified and retained. The helicopter setting boundary was moved downhill, and as a result increased the portion of the unit that will be helicopter logged.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): No concerns.

RECREATION (J. Kluwe): Unit is located northwest of Sunny Cove. Recreation use in the vicinity of the unit is not probable.

PRESCRIPTION (G. Lawton): Potential future entry if economical. Reserves for soils and marten mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves below and even-aged overstory removal in the helicopter above: clear-cut calls for number of snags and live replacements with 20" minimum diameters retained in 50 to 100 feet of the border. Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is required.

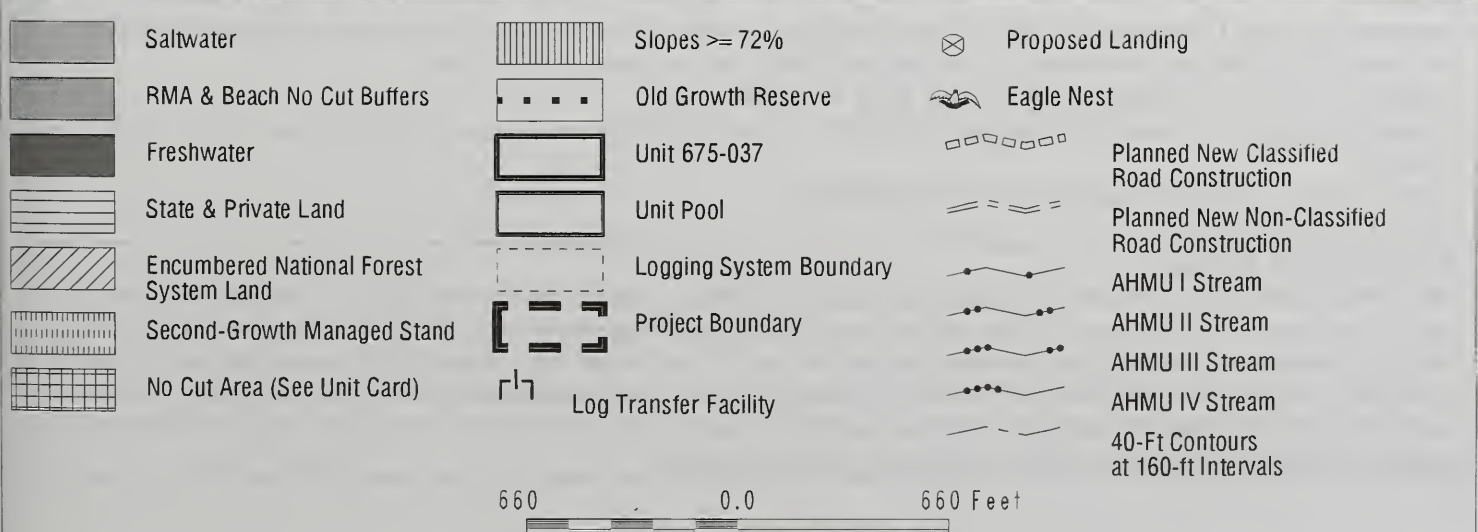
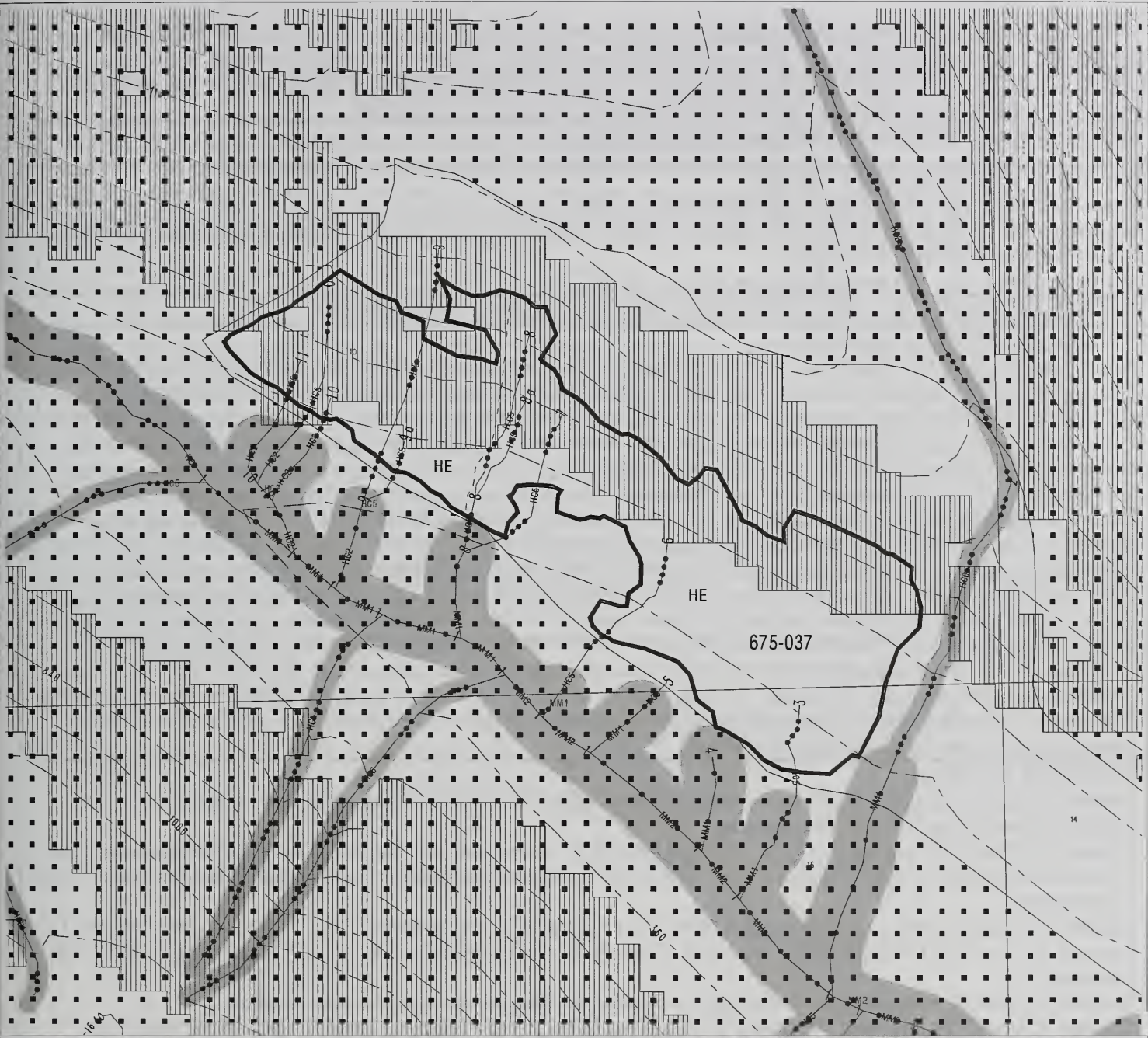
The area above cable reach will be helicopter removal via even-aged overstory removal >20.9 dbh. This would remove 2/3 of the BA and 75% of the volume across all species combined.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCUs where <33% of existing POG has been converted to young growth stands. These apply only to the western 2/3 of the unit (doesn't match wildlife). They require 10-20 acres of structural retention for high value marten habitat credited in: no-cut areas and 100' buffers along the two major streams up through the unit or in the area of approximately 16 acres was dropped for steep slopes. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. This works out to 460 live trees >20" dbh and 345 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave. 6 acres of scrub dropped in SE corner.

The cable portion above the road should be logged with slackline as far as possible and still achieving suspension for soils. Future activities: regeneration surveys, harvest evaluation on non-clearcut portions, release, and precommercial thinning at 15 to 20 years. A combination of partial and full suspension required for soil protection. Western stream is HC6 channel with additional 100'. See BMPs listed above.



CHOLMONDELEY ROD Unit 675-037



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 675-037 ACRES: 43 VOL: 1103 MBF ALTERNATIVES: 2, 3,4,5,6

PHOTO YR/#: 91/590-69,70 1/4 QUAD: ELEV. RANGE: 400-900 ASPECT: SW LOGGING SYSTEMS: H

WATERSHED#: F27A NAME/CAT#: Sunny/102-40-87 ROAD#: 2170000-3 WINDTHROW RISK: High
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F3, F11, F15, F18, F21, W1, W7, W28, W34, and V1S). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- 25 and 22; Superstand Net Vol/ac= 26,797;

Downhill Yarding- 90%; Windthrow risk- medium - high; Logging system Options- Running Skyline and Slackline; Regeneration System Options- several;

Site Productivity- 4/2; Average Site Index (50yr) - 75/100.

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 50 to 100 percent gradient with an estimated 8 acres of suitable ground for logging contained within an area of slopes over 72 percent gradient. Unit 037 was modified following reconnaissance to avoid unstable areas (BMP13.5). The steep slopes are associated with a cliff along the upper unit boundary. Pre-sale crews will verify these >72% steep slopes and not propose harvest on any continuous portions over 2 acres in size. A rationale for allowing timber harvest on slopes over 72 percent gradient is included in the Soil Resource Report. On slopes over 80 percent soils are thin, (<20 inches thick) organics over bedrock. These soils are susceptible to displacement during yarding of logs. Use full suspension to minimize soil displacements and landsliding. (BMPs 13.5 and 13.9). The south boundary stream flows in a large V-notch with a slope-break riparian area that transitions into an alluvial fan riparian area at the footslope. At least two smaller streams have slope-break riparian areas in the northern portion of the unit. (BMP 12.6). The riparian areas are entirely within the no-cut buffers. (BMPs 12.6a and 13.16). GIS over depicts amount of oversteepened slopes. See fisheries section for stream course protection measures. Windthrow is common in the unit and the reasonable assurance of windfirmness zones needs to reflect the increased probability for windthrow (BMPs 13.2, 12.6a and 13.16). An on site analysis for suitability on slopes over 72% was conducted on this unit as per Forest Plan standards See the soils report for details. Small inclusions of soils over 72 percent may be authorized for harvest during field review by a soil scientist. Reserve designations or boundary changes will be used by the presale crew to avoid harvest on these areas where deemed unsuitable.

FISHERIES (S. Farzan)

Stream# 1--Sunny Creek Class I Flagging BW C-type MM2/1 200' buffer--will be wider in most areas due to non-commercial timber and tributary stream buffers.

Stream# 2 Class I/III Flagging BW/OW C-type MM1/HC6 recommend 120' buffer + 50' with 16" dbh limit on Class I, Class III slopebreak buffer + 50' partial cut for windfirmness--southeast boundary. Recommend bridge for road crossing on this stream.

Stream# 3, 4, and 5 Class I,IV Flagging BW/GW C-type MM1,HC5 120' buffer in Class I then no buffer on Class IV.

Stream# 6 Class I/IV Flagging BW C-type HC5 Class I is in non-commercial, top of Class IV at 600' elevation--lots blowdown.

Stream# 7 Class IV Flagging GW C-type HC5 no buffer, top flagged and tagged at 600' elevation.

Stream# 8 Class I/IV Flagging BW/OW/GW C-type MM1/HC5 120' buffer on Class I, split on OW portion, no buffer.

Stream# 9B Class I Flagging BW/OW C-type MM1/HC5 buffer 100' off top of Class I, leave a slopebreak buffer of a few trees on the OW portion because lots of bedload is held back by wood in this stream.

Stream # 9A Class IV Flagging G/W C-type HC5 no buffer.

Stream # 10, 10A, 11 Class I/IV Flagging B/W, G/W C-type HC2/HC5 small streams, buffer Class I 100', no buffer on Class IV.

Unit changed to helicopter logging so no timing needed.

BMPs 12.6, 13.16, 14.6

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is some blowdown present in the unit. The unit is a western hemlock/blueberry/devils club plant association. If the acreage for high value marten habitat is left between Streams #8 and #9 it will need to be above 560', between Streams #7 and #8 it will need to be between 440' and 800'; between Streams #6 and #7 the retention will need to be above 360'. The entire area to the east of Stream # 6 and above the road qualifies as high value marten habitat as does the extreme northwestern portion of the unit. 4.3-8.6acres will be retained for 10-20% retention.

GEOLOGY/MINERALS:

LANDS (D. Sholly): Eleven mining claims present, protect and/or replace all claim markers.

CULTURAL: (T. Fifield) Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

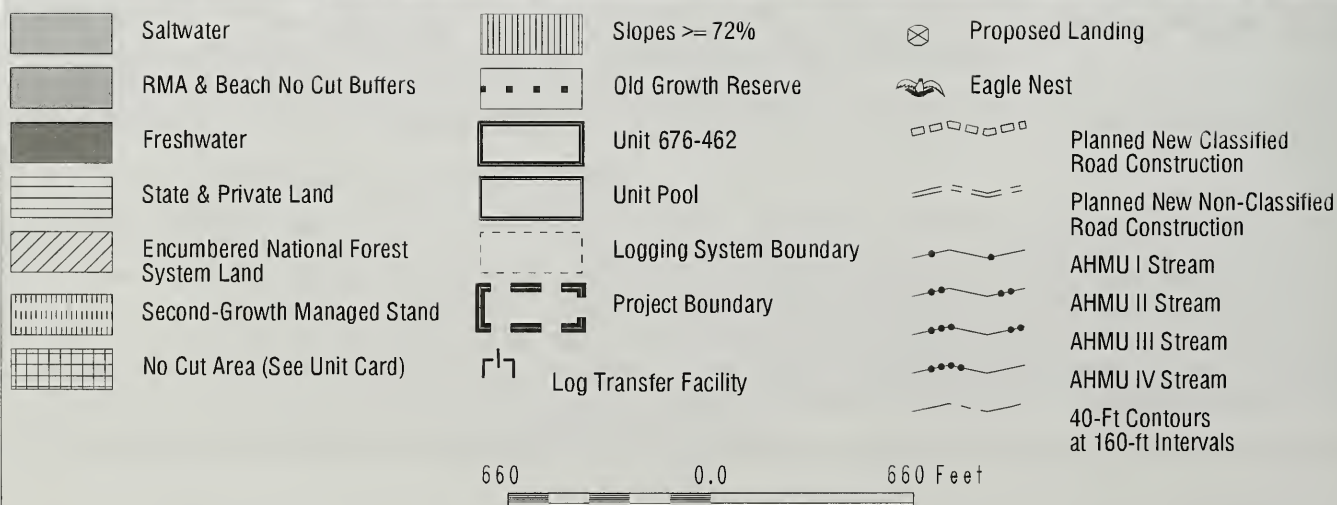
VISUALS (J. Short): No concerns

RECREATION (J. Kluwe): Unit is located northwest of Sunny Cove. Recreation use in the vicinity of the unit is not probable.

PRESCRIPTION (G. Lawton): One entry anticipated due to difficult terrain and difficulty of removing reserves. Reserves for soils and marten mitigation.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers, dispersed, and should contain large live trees and hard snags. Use clear-cut, which calls for a specified number of snags and live replacements with minimum diameter of 20" retained in 50 to 100 feet of the border. Due to the flexibility of the setting boundaries, live reserve trees may only be required wherever a stream buffer is required. Soils, partial suspension is required on most of unit.

Forest Plan standards and guidelines require retention of specific structure on high value marten habitat in high risk biogeographical provinces with VCUs where <33% of existing POG has been converted to young growth stands. These apply only to most of the unit. They require 5-10 acres of structural retention for high value marten habitat credited in: potential retention of 10 acres around several of the streams in the center of the unit (possible cliffs) or 8 acres of steep slopes dropped. These structural requirements also call for the retention of: four large (greater than 20" dbh) trees per acre and three snags (greater than 20" dbh) and an overall average canopy cover of 30% (doms, codoms or GT 16" dbh). The intent is for uniform distribution, but trees may be clumped for operational concerns or ecological opportunities. Calculates to 192 live trees >20" dbh and 144 snags >20" dbh that need to be retained. These should be available in the leave clumps/buffers mentioned above (need field verification). If trees are not available additional trees will have to be marked or clumped to leave. Salvage blowdown where possible. Leave as much windfirm trees as possible. Presale See profiles. Avoid rocks in NW corner and cliff along the whole backline. Windthrow at the bottom of unit. Don't expand into unstable adjacent areas. Future activities: regeneration surveys and release. Full suspension required for soil protection. Additional 50' RAW on eastern stream. See BMPs listed above.



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-462 ACRES: 14 VOL: 176 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/490-133,2 1/4 QUAD: ELEV. RANGE: 1000-1100 ASPECT: NE LOGGING SYSTEMS: HE

WATERSHED#: F31A NAME/CAT#: ROAD#: None WINDTHROW RISK: Moderate - Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F1, F11, F18, F20, F21, W1, W7, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands-25; Superstand Net Vol/ac=14,231; Barely merchantable volume; much cedar dieback moderate WT risk, 2-story, majority pole sized trees, very steep areas in NW; Logging systems options: HE,RS uneconomical; a regenerations systems: CC-D w/seed trees retained; OSR.14"

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 50 to 80 percent gradient with approximately 1 acre on slopes over 72 percent gradient identified as suitable. Use a minimum of partial suspension to keep soil displacements within soil quality standards (BMP 13.5, and 13.9). Full suspension is planned. One stream on the southwest side of the unit has a riparian area below the slope-break. The riparian area will be entirely within the buffer (BMPs 12.6, 12.6a and 13.16). See fisheries section for stream course protection measures. Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification. Provide a slope break plus RAW buffer with the intent of protecting tributaries to Drinking Water Creek (BMP 12.6a).

FISHERIES (J. Hannon)

Unit not visited by fisheries. GIS shows a Class II on the south side, Class III on the southwest (Stream #6). Plan for a 100' buffer on the Class II (HC1) and a slopebreak buffer on the Class III. Evaluate all streams during layout and apply appropriate protection measures. No streams in unit or affecting unit boundaries
BMP 12.6, 13.16

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density Unit is mixed conifer/blueberry, mixed conifer/copperbush/deer cabbage and mixed conifer/copperbush plant associations. No high value marten habitat in the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See unit 675-028 discussion.

RECREATION (J. Kluwe): Unit is located north of Sunny Cove. Recreation use in the vicinity of the unit is not probable.

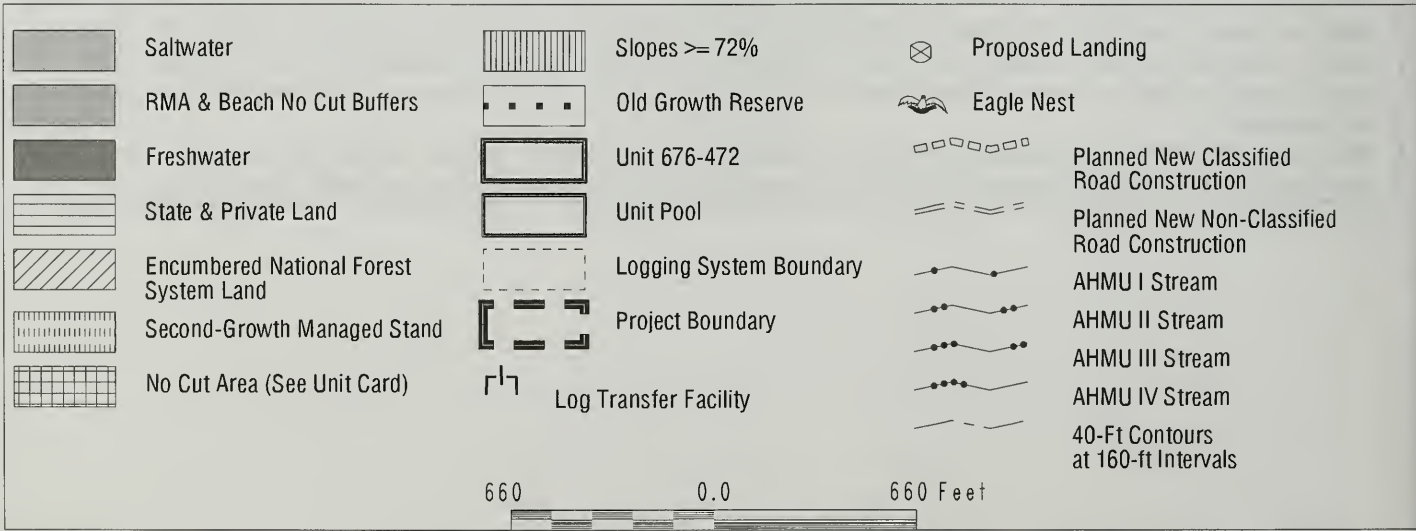
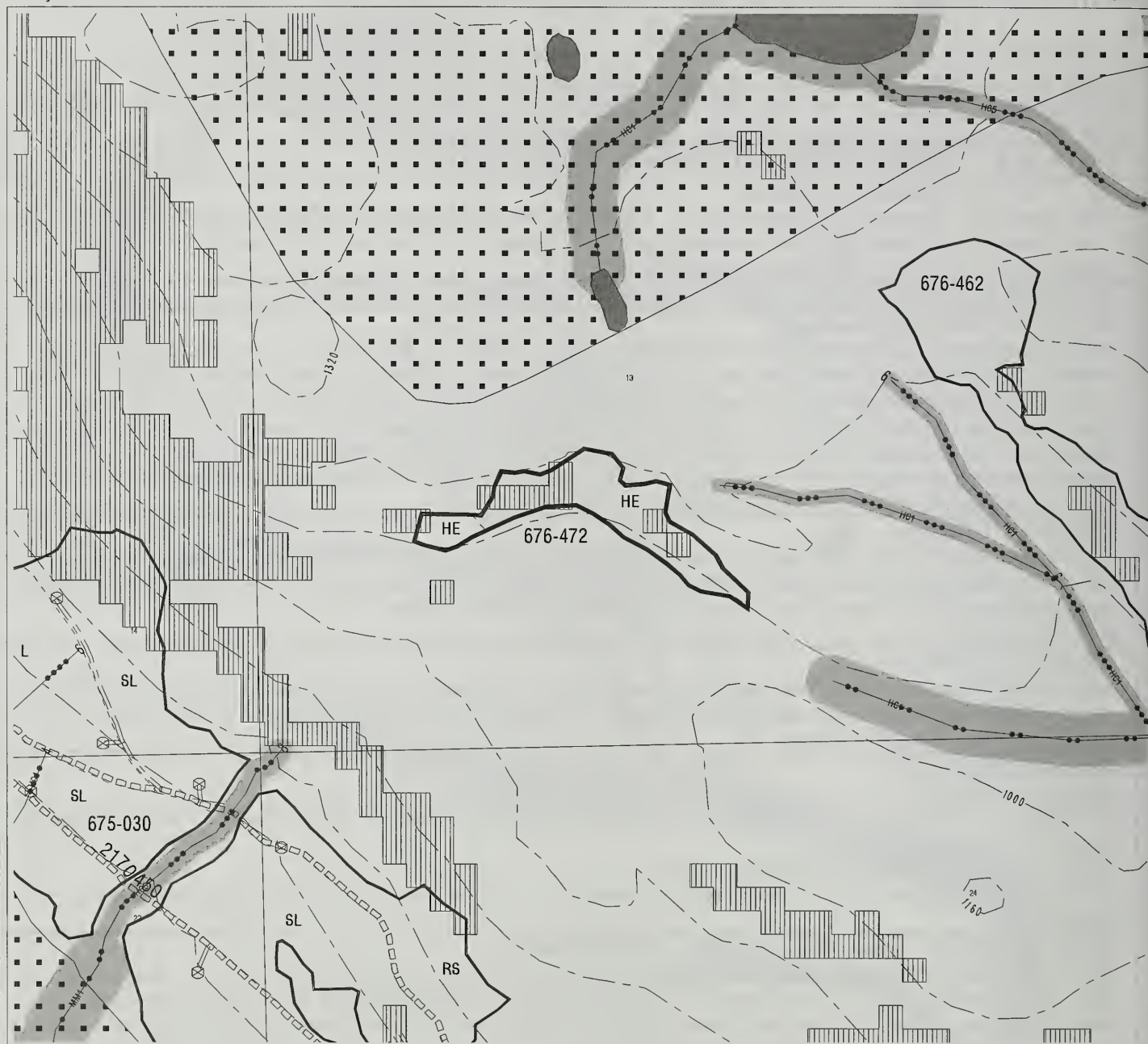
PRESCRIPTION (G. Lawton) One entry isolated timbered stand.

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers, dispersed, and should contain large live trees and hard snags. Use: clear-cut, helicopter logging would leave non-merchantable trees and safe snags over the entire unit. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Leave cedar seed trees on perimeter for seeding. Option: drop road to 676-472, 462,489 and helicopter all three. No high volume strata exist in unit. Deleted acres due to steep terrain. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at +25yrs. Minimum of full suspension required for soil protection.

PROTECT POTENTIAL DOMESTIC WATER STREAM #1. See Fisheries section. Additional mitigation for activities upstream of domestic water users include (F20) increased buffers mentioned above. See BMPs listed above.



CHOLMONDELEY ROD Unit 676-472



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-472 ACRES: 5 VOL: 70 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/590-18 1/4 QUAD: ELEV. RANGE: 1200 ASPECT: S LOGGING SYSTEMS: HE

WATERSHED#: F28A NAME/CAT#: ROAD#: None WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F11, F18, F21, T4, W1, W7, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- N/A; Superstand Net Vol/ac= 14,476; Insects and Disease: Cedar Dieback- little
Downhill Yarding- 90%; Windthrow risk- medium-low; Logging system Options- Helicopter;
Regeneration System Options- Clearcut-type C and Seed Tree; Site Productivity- 4M; Average Site Index (50yr)-
75

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 20 to 70 percent gradient. Forested wetlands occur on slopes less than 45 percent gradient in the unit. Use a minimum of partial suspension to keep impact to the soil and wetlands resources within standards. (BMPs 13.5, 12.5 and 13.9). Full suspension is planned. A small wetland riparian area was identified on the small stream near the southwest corner of the unit. The riparian area is outside the unit boundary. (BMP 12.6)

FISHERIES (J. Hannon)

No Concerns. No streams.

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat in the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See unit 675-028 discussion.

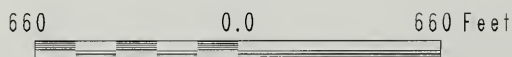
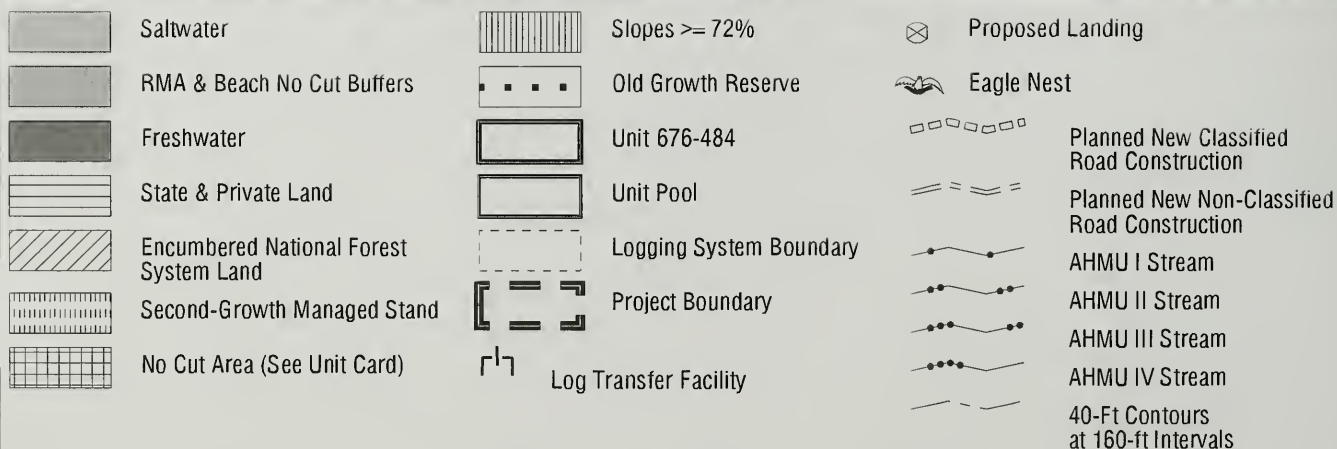
RECREATION (J. Kluwe): Unit is located north of Sunny Cove. See visuals section for design comments related to the recreation setting, as viewed from the mouth of Sunny Cove

PRESCRIPTION (G. Lawton)

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging. Clear-cut would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Leave cedar trees on perimeter for seed. Check option: drop road to 676-472, -462, -489 and helicopter all three. Helicopter logging system is anticipated on entire unit. No high volume strata exist in unit. Deleted acres due to high MMI. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at 25+ yrs. Minimum of Partial suspension required for soil protection. Low volume poor economics. See BMPs listed above.



CHOLMONDELEY ROD Unit 676-484



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-484 ACRES: 6 VOL: 102 MBF ALTERNATIVES: 2,3,4,5,6,7

PHOTO YR/#: 91/490-133,4 1/4 QUAD: ELEV. RANGE: 1000 ASPECT: SW LOGGING SYSTEMS: HE

WATERSHED#: F30A,F31A NAME/CAT#: Scrubby/Barley Clover 102-50-21 ROAD#: None

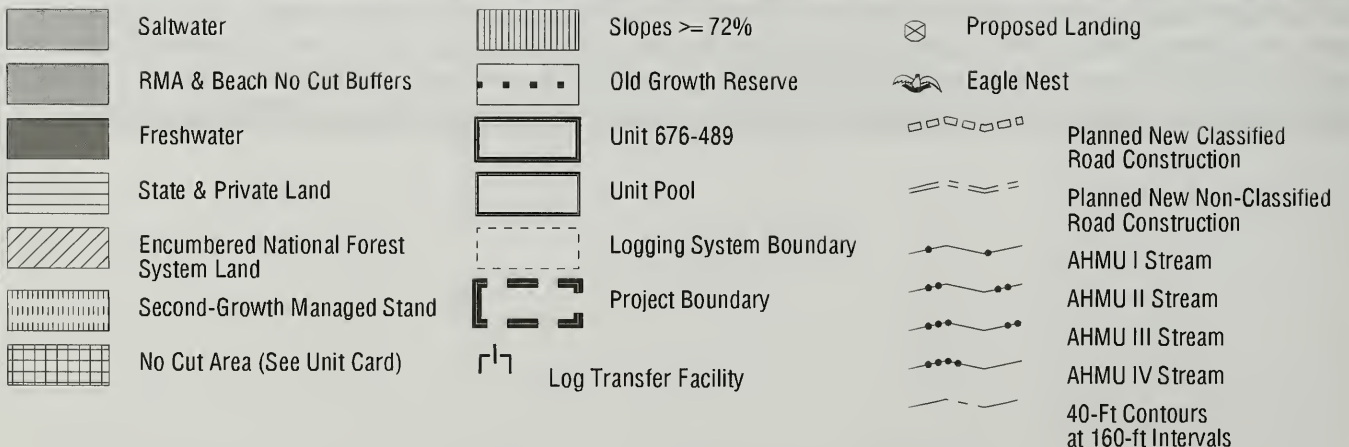
WINDTHROW RISK: Moderate

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F11, F15, F18, F21, W1, W7, W34, V1, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
SILVICULTURE/TIMBER (G. Lawton) Exam Stands- 35; Superstand Net Vol/ac= 31,918; Insects and Disease: n/a Downhill Yarding- n/a; Windthrow risk- medium; Logging system Options- Helicopter; Regeneration System Options- n/a; Site Productivity- 4; Average Site Index (50yr)- 75.
TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE
SOILS/WATERSHED (D. Landwehr) Slopes range from 60 to 90 percent gradient with an estimated 1 acres of slopes over 72 percent gradient. Use full suspension to minimize impacts to soils resources (BMP 13.5 and 13.9). The lake south of the unit and the pond east of the unit have very narrow lakeshore riparian areas that will be entirely outside the harvest unit. (BMPs 12.6, 12.6a and 13.16). See fisheries section for lake and stream protection measures. Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.
FISHERIES (J. Hannon) The shallow lake southwest of the unit was fished for 30 minutes; no fish were seen or caught. The unit is at least 100' from the lake. Stream #1 Class IV Flagging G/W C-type HC5. no buffer required.
WILDLIFE (M. Dillman) Wildlife did not survey this unit due to the fact that it did not comply with the current goshawk protocols for slope and volume class. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat in the unit. As a clear cut with reserves about 1-2 acres should be left in the unit.
GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns. VISUALS (J. Short): No concerns. RECREATION (J. Kluwe): Unit is located northeast of Sunny Cove. Recreation use in the vicinity of the unit is not probable.
PRESCRIPTION (G. Lawton) SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging. Clear-cut would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Leave Cedar seed trees along perimeter. Soils full suspension is required. Helicopter logging system is anticipated on entire unit. No high volume strata exist in unit. Future activities: regeneration surveys. Low volume, poor economics. See BMPs listed above.



CHOLMONDELEY ROD Unit 676-489



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-489 ACRES: 17 VOL: 289 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR/#: 91/490-133,4 1/4 QUAD: ELEV. RANGE: 900-1200 ASPECT: SE LOGGING SYSTEMS: HE

WATERSHED#: F28A/F30A NAME/CAT#: Drinking Water/Scrubby ROAD#: None WINDTHROW RISK: Low

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F11, F18, F20, F21, W1, W7, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- 28: Superstand Net Vol/ac= 17,761; Insects and Disease: Cedar Dieback- high, Mistletoe- little, and Rot- medium; Downhill Yarding- 90%; Windthrow risk- low; Logging system Options- Helicopter; Regeneration System Options- Clearcut-type B and Overstory Removal- 16"; Site Productivity- 4M; Average Site Index (50yr)- 75

TRANSPORTATION (Jack Oien): SEE ROAD CARDS FOR ROADS LISTED ABOVE

SOILS/WATERSHED (D. Landwehr)

Slopes range from 30 to 80 percent gradient with an estimated 2 acres of slopes over 72 percent gradient in the northwest corner of the unit identified as suitable. Forested wetlands occupy 5 acres in the southeast corner of the unit. Use full suspension to minimize impacts to soil and wetland resources (BMP 12.5, 13.5, and 13.9). There is a small wetland riparian area surrounding the pond south of the unit. (BMP 12.6). The riparian area is entirely outside the unit boundary. Involve a soil scientist during layout to verify small inclusions where slopes over 72% are suitable for timber harvest per TPIT clarification.

FISHERIES (J. Hannon)

Unit not visited by fisheries. No GIS mapped streams in unit. A lake south of the unit may not be shown in GIS. Check for streams during layout and apply appropriate protection measures.
BMP 12.6, 13.16

WILDLIFE (M. Dillman)

Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat in the unit. As a clear cut with reserves 2-4 acres should be left in the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL: (T. Fifield) Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See Unit 675-028 discussion.

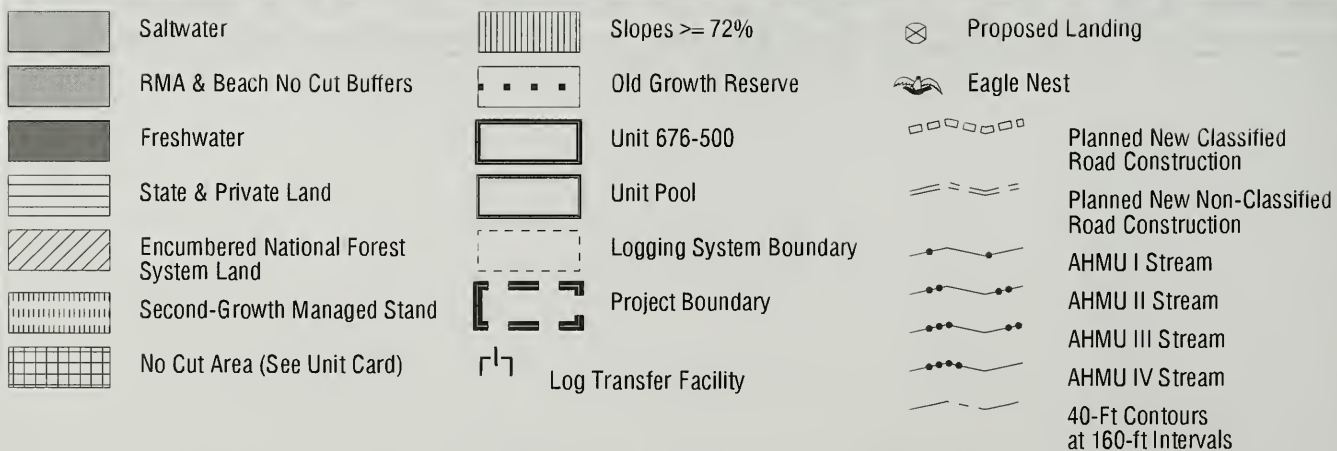
RECREATION (J. Kluwe): Unit is located north of Sunny Cove. Recreation use in the vicinity of the unit is not probable.

PRESCRIPTION (G. Lawton)

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging. Clear-cut would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Leave cedar trees a perimeter for seeding. Option: drop road to 676-472, -462, -489 and helicopter all three. Helicopter logging system is anticipated on entire unit. No high volume strata exist in unit. Future activities: regeneration surveys, yellow cedar planting, seed collection, survival survey, and pre-commercial thin at +25yrs. Full suspension required for soil protection. Use: 1st choice of regeneration system = clear-cut- type C, and 1st choice of logging system = Helicopter. Poor volume and economics. See BMPs listed above.



CHOLMONDELEY ROD Unit 676-500



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-500 ACRES: 9 VOL: 135 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR#: 91/490-133,4 1/4 QUAD: ELEV. RANGE: 800-1000 ASPECT: S LOGGING SYSTEMS: HE

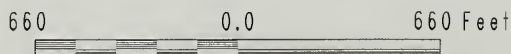
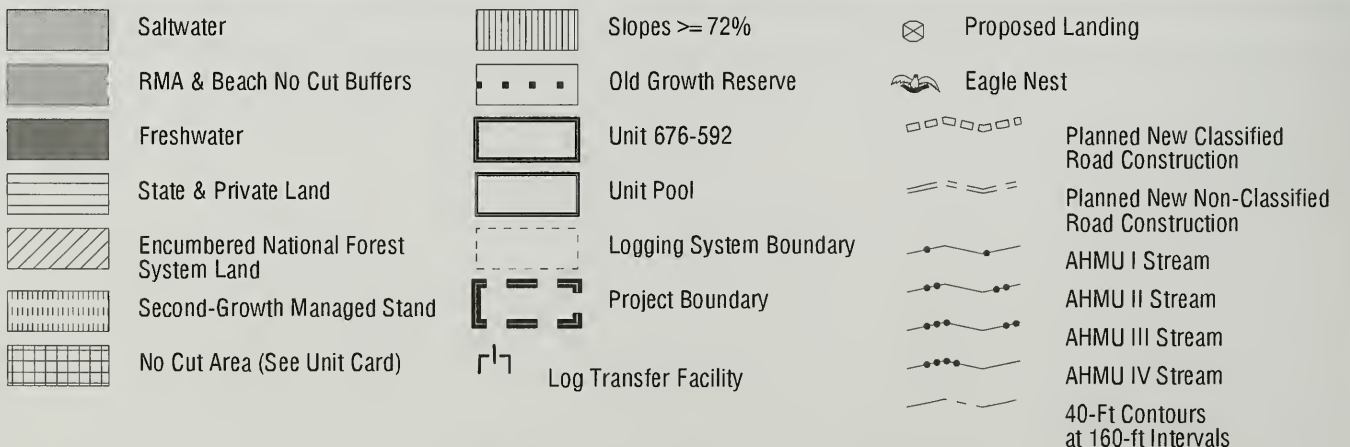
WATERSHED#: F30A NAME/CAT#: SCRUBBY ROAD#: None WINDTHROW RISK: Medium

The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F18, F20, F21, W1, W7, W34, V1, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS
<p>SILVICULTURE/TIMBER (G. Lawton) Exam Stands- N/A; Superstand Net Vol/ac= n/a; Insects and Disease: n/a Downhill Yarding- n/a; Windthrow risk- medium; Logging system Options- Helicopter; Regeneration System Options- n/a; Site Productivity- 4; Average Site Index (50yr)- 75.</p>
<p>TRANSPORTATION: SEE ROAD CARDS FOR ROADS LISTED ABOVE</p>
<p>SOILS/WATERSHED (D. Landwehr) Slopes range from 30 to 60 percent. Use a minimum of partial suspension to minimize impacts to soil resources. (BMP 13.9). Small slope-break and wetland riparian areas occur on the streams south and west of the unit. On the western boundary the riparian area may be within the harvest unit. (BMP 12.6 and 12.6a and 13.16).</p>
<p>FISHERIES (J. Hannon) The stream on the southern boundary is mapped as a Class III. No fish were found upstream in the lake. The final stream classification will need to be made during layout. No streams affect unit boundaries. BMP 13.16</p>
<p>WILDLIFE (M. Dillman) Wildlife did not survey this unit due to the fact that it did not meet current goshawk protocol guidelines. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. There is no high value marten habitat in the unit.</p>
<p>GEOLOGY/MINERALS: LANDS: No concerns. CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns. VISUALS: (J. Short): No concerns. RECREATION (J. Kluwe): Unit is located northeast of Sunny Cove. Recreation use in the vicinity of the unit is not probable.</p>
<p>PRESCRIPTION (G. Lawton) SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <15% of cutting unit or <30 CCF, where feasible and safe. Areas should be in clumps or patches, buffers or blind-leads, dispersed, and should contain large live trees and hard snags. Use clear-cut, helicopter logging would leave non-merchantable trees and safe snags over the entire unit. This type of clear-cut can be used with helicopter yarding. Large snags in the center of a unit may also present a problem due to prop wash and log-line contact. Leave cedar seed trees along perimeter. Soils partial suspension is required on the entire unit. Helicopter logging system is anticipated on the entire unit. No high volume strata exist in unit. Future activities: regeneration surveys. See BMPs listed above.</p>



CHOLMONDELEY ROD Unit 676-592



CHOLMONDELEY PROJECT HARVEST UNIT DESIGN CARD (ROD)

VCU-UNIT#: 676-592 ACRES: 9 VOL: 256 MBF ALTERNATIVES: 2,3,4,5,6

PHOTO YR#: 91/490-51,52 1/4 QUAD: ELEV. RANGE: 100,200 ASPECT: SW LOGGING SYSTEMS: HE

WATERSHED#: 000Z NAME/CAT#: ROAD#: 2170100 WINDTHROW RISK: Moderate to High
The following mitigation measures were either taken during unit design or they will be applied during project implementations: (M1, M2, F3, F18, F21, W1, W7, W34, V1, V8, and V13). These measures are described below within the resource sections that apply and correspond to Appendix C of the FEIS.

RESOURCE CONSIDERATIONS/RECOMMENDATIONS

SILVICULTURE/TIMBER (G. Lawton)

Exam Stands- N/A; Superstand Net Vol/ac - 32,030; Insects and Disease: Cedar Dieback- high;
Downhill Yarding- 20%; Windthrow risk- medium-high; Logging system Options- Helicopter, Running Skyline, and Shovel;; Site Productivity- 4; Average Site Index (50yr)- 80.

TRANSPORTATION (Jack Oien) - SEE ROAD CARDS.

SOILS/WATERSHED (D. Landwehr)

Slopes range from 30 to 50 percent gradient. Forested wetlands occur on slopes less than about 40 percent gradient in unit 592. Use a minimum of partial suspension to minimize impacts to soil and wetland resources (BMP 12.5 and 13.9). One slope-break and one estuary riparian area occur in and adjacent to unit 592. The riparian areas will be entirely within the buffers (BMP 12.6, 12.6a and 13.16). See fisheries section for stream course protection measures (BMP 12.6a and 13.16).

FISHERIES (J. Hannon)

Six flagged and tagged streams are Class I below the unit. The unit boundary was moved back when it was discovered that the lakes at the bottom were actually estuary. This eliminated fish stream buffers affecting the unit and much commercial timber.

Stream# 3 Class IV Flagging GW C-type HC5 The stream is the northwest unit boundary. A Pacific Yew was downstream at 175' elevation.

Stream# 6 Class IV Flagging GW C-type HC5 The stream may not reach the eastern unit boundary, Pacific Yew 75' upstream of Class III/IV break.

No streams affect unit boundaries 9-11-99 john.

BMPs 12.6, 13.16

WILDLIFE (M. Dillman)

Wildlife did not survey this unit due to the fact that it is small and isolated. Recommend leaving live reserve trees and snags where possible to maintain habitat structure and snag density. No high value marten habitat exists in the unit.

GEOLOGY/MINERALS:

LANDS: No concerns.

CULTURAL (T. Fifield): Low sensitivity unit as defined in 95 SHPO PMOA (#95-MOU-10-029). Unit not selected for survey. No concerns.

VISUALS (J. Short): See Unit 675-028 discussion.

RECREATION (J. Kluwe): Unit is located east of Sunny Cove. See visuals section for design comments related to the recreation setting, as viewed from the mouth of Sunny Cove. Timing harvest/yarding activities outside the primary recreation use season (5/20-9/10) would reduce impacts to recreation activities in the area.

PRESCRIPTION (G. Lawton)

SILVICULTURAL SYSTEM FOR THE ROD: Even-aged clear-cut with reserves: retain <45% of cutting unit or <30 CCF, where feasible and safe. Clear-cut calls for a specified number (~25 trees per acre) of snags and live replacements with 20" diameter limit retained in 50 to 100 feet of the border. Partial suspension is required for soils protection on the SW 1/3. No high volume strata exist in unit. Future activities: regeneration surveys. Unit near 1000' buffer. See BMPs listed above.

Appendix 3

Road Cards

Appendix 3

Rocky Coast

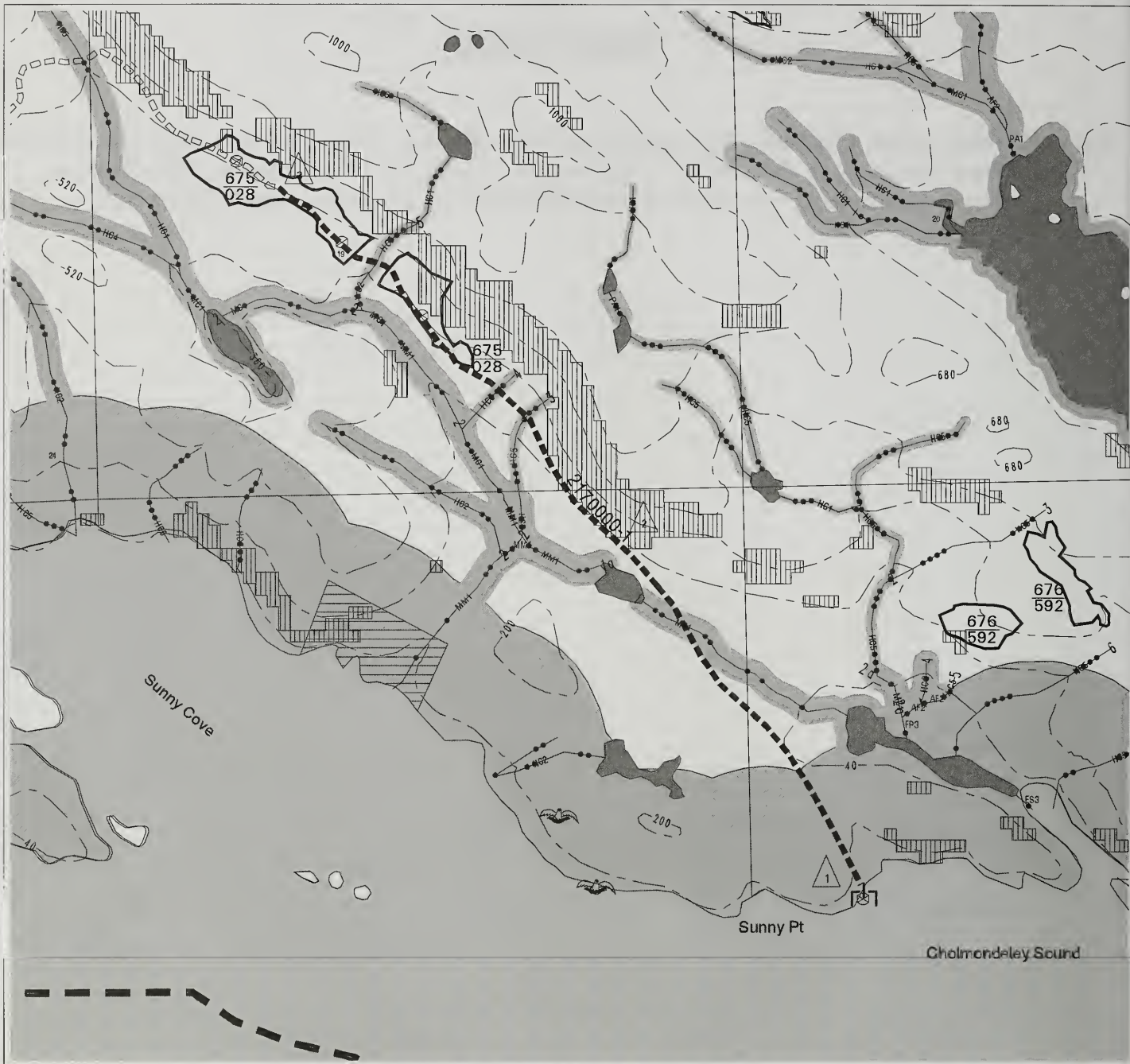
Cholmondeley Record of Decision

Road Cards

The road cards provide a summary of information about individual proposed or existing roads which are included in one or more alternatives. They display site-specific information such as additional mitigation measures, observations, and need for further assistance during field layout.



CHOLMONDELEY ROD Road 2170000-1



- Saltwater
- RMA & Beach No Cut Buffers
- Freshwater
- State & Private Land
- Encumbered National Forest System Land
- Slopes $\geq 72\%$
- Biologically Significant Wetlands

- Unit Pool
- Project Boundary
- Log Transfer Facility
- Source of Base Course & Surface Rock
- Proposed Landing
- Eagle Nest

- Planned New Classified Road Construction
- Planned New Non-Classified Road Construction
- Road 2170000-1
- AHMU I Stream
- AHMU II Stream
- AHMU III Stream
- AHMU IV Stream
- 40-Ft Contours at 160-ft Intervals

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2170000-1	Route Name Lybrandberry Lane	Status New Construction
Begin Milepost (Bmp) 0.00	Length (miles) 1.43	Begin Termini 0.00
		End Termini 1.43

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface Rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use

Silvicultural activities. Road to be open to administrative use only, all other motorized vehicle traffic will be prohibited by closure order, closure order to include prohibition of firearms in the area by contractors.

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: Inactive
Travel Management Strategies		
Encourage:	N/A	
Accept:	Hikers, Bicycles,	
Discourage:	N/A	
Prohibit:	Motorized vehicles	
Eliminate	Passenger vehicles	

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2170000-1

Road Location: Road access units 675-027 & 028. Log transfer facility (LTF) will require shop area < 1 ac., +/- 1000 feet from LTF, numerous non-wetland areas available. Grades are favorable to 12%; construction difficulty is easy to moderate. Location controlled by stream crossing along route, high value wetlands avoidance and avoidance of impacts on private water system. LTF location will need to maintain the minimum 330-foot buffer on eagle nests. No areas with sideslopes exceeding 67% were crossed. A comprehensive plan-in-hand review will be made of the road design before construction. Review team will include a soil/hydrology specialist familiar with requirements of state drinking water standards.

Wetlands: Road location was completed to avoid wetlands wherever practicable. Wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources. Alternatives to the location on wetlands would mean longer, higher cost roads that may have affected similar areas of wetlands. High value wetlands (fens) were particularly avoided wherever practicable. Area in forested wetlands milepost (MP) 0.3 to 0.5 is unavoidable due to stream crossing location and to reduce total roading miles. Other wetland areas crossed from MP 0.9 to MP 1.75 are controlled by topography and grade restrictions and other resource concerns.

Erosion Control: All streams within the Sunny Cove drinking water system will be crossed with log structures (or similar structures) that allows road crossing without instream work occurring. Cross drains will be installed to remove road surface water from the roadway prior to entering existing drainages. Use of straw bales and silt fences will be required at all designated stream crossing to minimize or eliminate sediment entering streams.

Rock Pits: As shown on map, no major concerns. Rock source will be required near the LTF site. Timing will be required on all blasting within one half mile of known eagle nests. No rock pits allowed within the Sunny Cove drinking water watershed.

Resource Information (If applicable):

Timber/Logging: High probability of salvage timber remaining after initial entry.

Soils/Water: The proposed route traverses 10 to 40 percent sideslopes to access units 675-027 and 028 from the LTF. Cedar-hemlock-blueberry forested wetlands are crossed for about 75 percent of the proposed route. The wetlands occur mostly on sideslopes of small hills and serve to store and transfer water downslope. Wetlands occupy nearly all sites except extremely steep slopes and beachside areas. Avoidance while accessing the proposed harvest units is impossible without affecting more sensitive areas like lakes, streams and estuaries. (BMPs 14.2 and 12.5) Helicopter yarding is considered under alternative 2 in this EIS. At approximately milepost 0.5 the location enters the Drinking Water Creek Watershed, so named because it is a domestic water source for Sunny Cove Residents. Timing will be required to reduce erosion potential (BMP 14.6). An erosion control plan that adequately addresses drinking water concerns will need to be developed during the plan-in hand review. (BMPs 14.6, 14.7, 14.8, 14.9, 14.11, 14.12, and 14.14). The erosion control plan should include mitigation such as installation of settling ponds at stream crossings, riprap and erosion control fabric at stream crossings, timing so work only takes place during low flow conditions, and use of portable toilets inside the Watershed. Control of road drainage will be critical as the road location parallels the stream and is within 200 feet of the stream for much of its length. Rock pits should not be located in the Drinking Water Watershed (BMPs 14.2, 14.8, 14.12, and 14.25). A rock pit in wetlands will likely be necessary (BMPs 12.5 and 33 CFR BMP 8). Apply 33 CFR BMPs 2, 4, 5, 6, 8, 11 and 14. Fuel storage and refueling equipment will need to be located outside the Drinking Water Watershed (BMP 12.8). This road meets the silvicultural exemption from the 404 permitting process. Other options for mitigating sediment inputs to the drinking water system include capping the water system intake pipe during construction, and helicopter yarding the entire group of Sunny Cove units.

Road Management Objectives

Silviculture: Road No. 217000-1 provides easy short access to units 675-027 and 675-028. Potential for 5 acres of release and 17 acres of PCT in 25+ years are planned for unit 675-027. Potential for 23 ac. of PCT in 25+ years are planned for unit 675-028.

Wildlife/Botany: There are two bald eagle nest trees in the area of the LTF for this road. Nest #66 is approximate five miles to the west and # 65 about 0.5 mile to the east. Maintain the minimum 330' buffer around both nests. Road building and LTF construction must be done in accordance with the requirements of the Bald Eagle Protection Act, and must comply with the MOU between the FS and USFWS. Written coordination must be documented. *Taxus brevifolia*, the Pacific yew, was also reported in the vicinity of this road at the east end of unit 675-028. Pacific yew trees are protected under the Pacific Yew Tree Act of 1992. This act states that:

- A) Inventory and maintain existing populations of Pacific yew trees,
 - a. Locate and document the location of any existing plants during Forest Service project activities,
- B) If found, implement site-specific silvicultural prescriptions to maintain Pacific yew's regeneration capabilities and presence on the site, and
- C) Retain Pacific yew during timber stand improvement activities such as precommercial thinning wherever feasible (Forest Plan Forest-Wide Standards and Guidelines Chapter 4, page 95). Coordinate final road location to avoid sensitive plant populations where feasible. Unit 675-027 was dropped at the April IDT meeting.

Lands/Minerals/Geology/Karst:

Visual/Recreation: At LTF, retain as much vegetative buffer as possible around edge of site including between log transfer ramp and ramp to boat dock. After harvest activities are complete re-contour operating area as much as possible and re-vegetate with native vegetation.

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2170000-1

The road passes through the Sunny Cove domestic water supply watershed. Avoid road construction activities within the watershed during very wet periods.

The road parallels a small lake on the east side of the drinking water watershed. The lake has a high cutthroat population. Try to keep the road clearing limits at least 100' back from the lake if the slopes allow.

A.) MP 0.45 AHMU Class II Channel Type: MC1 BF Width: 1.5m BF Depth: 20cm Substrate: cobble
Gradient 5 % Structure 1500mm cmp Passage Req'd. Yes Timing Dates: 6/1-8/7

Narrative: Crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 feet. Pink salmon stream. Use log stringer structures with in the Sunny Cove watershed and other areas where there are concerns for water quality or timing of construction.

B.) MP 0.75 AHMU Class III Channel Type: HC5 BF Width: 1m BF Depth: 15cm Substrate: bedrock (bdrk)
Gradient: 10 % Structure log stringer bridge Passage Req'd.: No Timing Dates: none

Narrative: Stream is part of drinking water watershed. This stream had a landslide come through about 10 years ago. Use a log stringer bridge and limit culvert installation to periods of low stream flow.

C.) MP 0.90 AHMU Class III Channel Type: HC5 BF Width: 2m BF Depth: 20cm Substrate: bdrk
Gradient 15 % Structure: log stringer bridge Passage Req'd.: No Timing Dates: none

Narrative: Part of drinking water watershed--use a log stringer bridge and limit culvert installation to periods of low streamflow.

D.) MP 1.20 AHMU Class III Channel Type: HC5 BF Width: 2m BF Depth: 30cm Substrate: bdrk
Gradient 15 % Structure: log stringer bridge Passage Req'd. No Timing Dates none

Narrative: Part of drinking water watershed--use a log stringer bridge and limit culvert installation to periods of low streamflow.



CHOLMONDELEY ROD Road 2170000-2



- | | | | | | |
|--|--|--|--------------------------------------|--|--|
| | Saltwater | | Unit Pool | | Planned New Classified Road Construction |
| | RMA & Beach No Cut Buffers | | Project Boundary | | Planned New Non-Classified Road Construction |
| | Freshwater | | Log Transfer Facility | | Road 2170000-2 |
| | State & Private Land | | Source of Base Course & Surface Rock | | AHMU I Stream |
| | Encumbered National Forest System Land | | Proposed Landing | | AHMU II Stream |
| | Slopes $\geq 72\%$ | | Eagle Nest | | AHMU III Stream |
| | Biologically Significant Wetlands | | | | AHMU IV Stream |

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2170000-2	Route Name Lybrandberry Lane	Status New Construction
Begin MP 1.43	Length (miles) 1.91	Begin Termini 1.43
		End Termini 3.34

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest Ownership	AFRPR Status:	Inactive
Travel Management Strategies					
Encourage:		N/A			
Accept:		Hikers, Bicycles			
Discourage:		N/A			
Prohibit:		Motorized vehicles			
Eliminate		Passenger vehicles			

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2170000-2

Road Location: Road access units 675-029 & 030, road construction should be moderate to easy over most portions of the road. Road crosses some small areas (MP 0.90) of sideslopes exceeding 67% by utilizing existing benches. Use of log stringer structures to be used in the Sunny Cove watershed for all drainages to minimize effects on water resources. A comprehensive plan-in-hand review will be made of the road design prior to construction. Review team will include a soil/hydrology specialist familiar with requirements of state drinking water standards.

Wetlands: Road location was completed to avoid wetlands (see map) although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints, and considerations for other resources.

Erosion Control: All streams within the Sunny Cove drinking water system will be crossed with log structures (or similar structures) that allows road crossing without instream work occurring. Cross drains will be installed to remove road surface water from the roadway prior to entering existing drainages. Use of straw bales and silt fences will be required at all designated stream crossing to minimize or eliminate sediment entering streams.

Rock Pits: As shown on map, no major concerns. No rock pits allowed within the Sunny Cove drinking water watershed.

Resource Information (If applicable):

Timber/Logging: High probability of salvage timber remaining after initial entry.

Soils/Water: The proposed route traverses forested wetlands and scrub-shrub cedar-hemlock-blueberry-skunk cabbage forested wetlands on slopes up to 40 percent gradient for the first mile of the proposed route. The road accesses units 675-029 and 030. Uplands occur on slopes greater than about 45 percent gradient in units 029 and 030. The first 3/4-mile of the route is located in the Drinking Water Watershed. The wetlands occur on sideslopes and footslopes and serve to store and transfer water to downslope resources. The wetlands are unavoidable while providing access to the harvest units. (BMP 12.5 and 14.2). Helicopter yarding is considered in a alternative 2 in this EIS. Within the Drinking Water Watershed use BMPs 12.8 to require storage and refueling of vehicles outside the watershed. During a plan-in-hand review use BMPs 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, 14.14, and 14.19 to minimize sediment inputs to surface waters. Timing of construction activities during low flow and non-rainy periods should be considered. Rock pits need to be located outside the Drinking Water Watershed (BMP 14.8). Control of sidecast and runoff will be critical to keeping waters clean given the close proximity of the road to the stream. (BMP 14.12 and 14.18). Road maintenance (BMP 14.20) and timing of haul (BMP 14.6) may be necessary during hauling of logs to prevent runoff from entering the stream. The last 0.4 miles of the 2170000-2 road traverses slopes up to 70 percent gradient on uplands in the Sunny Creek Watershed. The soils along the proposed route are fairly landslide prone. Use full bench and end-haul construction when sideslopes exceed 55 percent gradient, especially where the road contours in and out of two streams in unit 675-030 (BMP 14.7). End-hauled material will likely have to be disposed of in wetlands south of the unit. Rock pits and end-haul sites should be located outside of the Drinking Water Watershed. Fish timing is required on these crossings. Use additional timing restrictions if necessary to prevent construction during wet weather. (BMP 14.6). A soil scientist should be involved in a plan-in-hand review of this road to apply appropriate mitigation on the final location. (BMPs 14.2, 14.7, 14.6, 14.8, 14.9, and 14.11). Apply 33 CFR BMPs 2, 4, 5, 6, 8, 11, and 14.

Road Management Objectives

Soils/Water: Road No. 217000-2 will provide short access to units 675-029 and 675-030. A potential release of 10 ac. and 29 ac of PCT in 25+ years are planned for unit 675-029. Potential for 25 ac. of release and 51 ac. of PCT in 15-20 years is planned for 675-030.

Silviculture: Road No. 217000-2 provides access to units 675-030 and 675-029. Potential for 25 ac. of release and 51 acres of PCT in 15-20 years are planned for unit 675-030. Potential for 10 ac. of release and 28 ac. of PCT in 25+years are planned for unit 675-029.

Wildlife: Several populations of the plant species *Platanthera chorisiana* were along or near the planned road location. The road runs along the footslope through many wetland and forest edge habitats and crosses numerous small streams. All these habitats support populations of the orchid, which is no longer listed on the sensitive plant species list. The most effective way to avoid affecting these populations would be to relocate the road further upslope and into a more well drained area.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2170000-2

A.) MP 0.00 AHMU Class II Channel Type: HC6 BF Width: 1.1m BF Depth 20cm Substrate: bdrk
Gradient 14 % Structure: log stringer Passage Req'd.: Yes? Timing Dates : none
bridge

Narrative:

B.) MP 0.75 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient : 17 % Structure log stringer Passage Req'd.: No Timing Dates: none
bridge

Narrative: Part of drinking water watershed--use a log stringer bridge and limit culvert installation to periods of low streamflow. Review in field to determine fish passage requirements depending on final road location.

C.) MP 1.20 AHMU Class III Channel Type: HC5 BF Width: 2m BF Depth: 20cm Substrate: bdrk
Gradient 15 % Structure: log stringer Passage Req'd.: No Timing Dates: 6/15 - 8/7
bridge

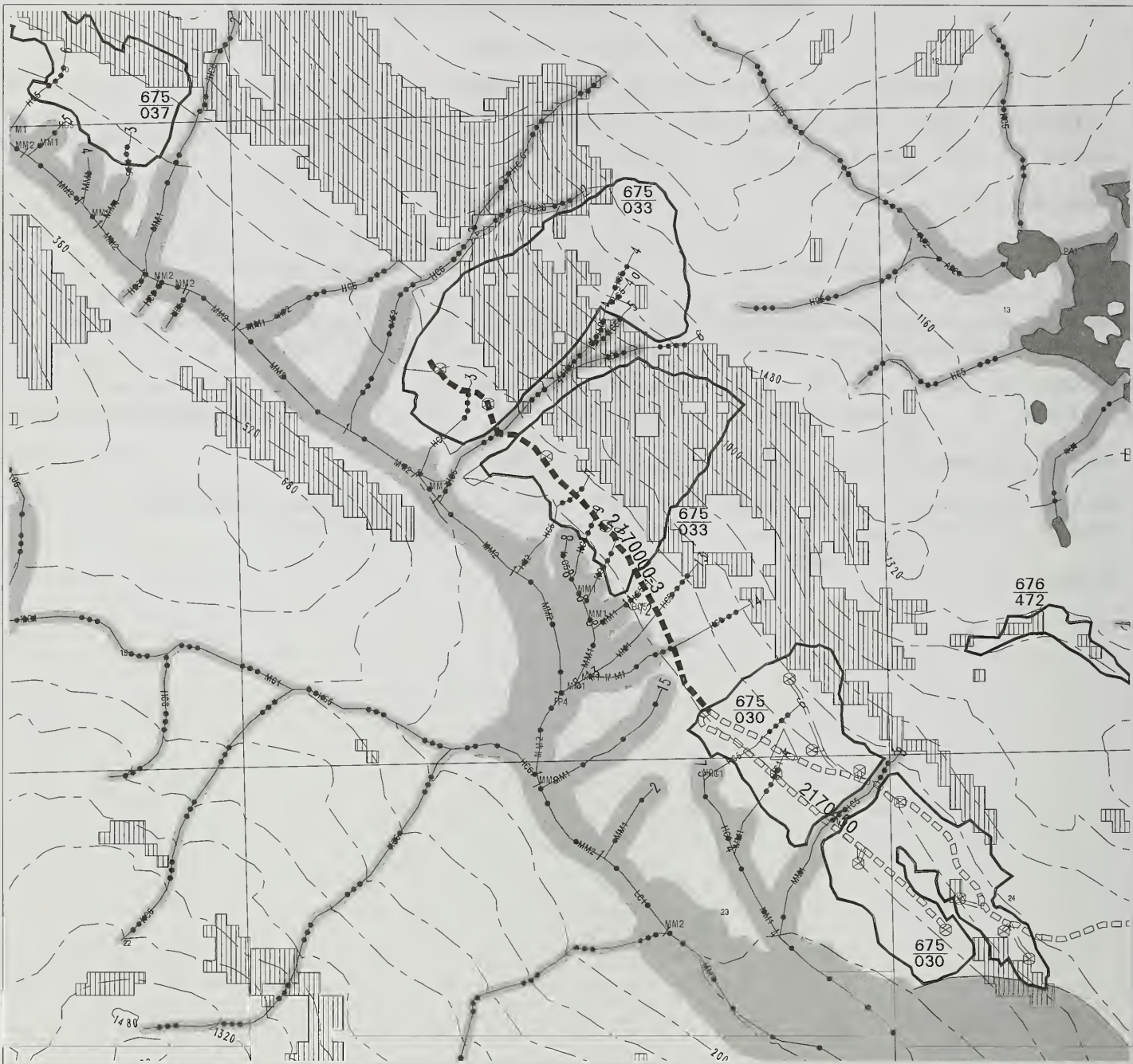
Narrative: Recommend timing for pink, chum, and coho salmon 6/15 - 8/7.

D.) MP 1.30 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient : 17 % Structure : log m Passage Req'd.: No Timing Dates: none
stringer bridge

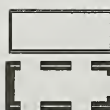
Narrative:



CHOLMONDELEY ROD Road 2170000-3



Saltwater
RMA & Beach No Cut Buffers
Freshwater
State & Private Land
Encumbered National Forest System Land
Slopes $\geq 72\%$
Biologically Significant Wetlands



Unit Pool
Project Boundary
Log Transfer Facility
Source of Base Course & Surface Rock
Proposed Landing
Eagle Nest



Planned New Classified Road Construction
Planned New Non-Classified Road Construction
Road 2170000-3
AHMU I Stream
AHMU II Stream
AHMU III Stream
AHMU IV Stream
40-Ft Contours at 160-ft Intervals

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2170000-3	Route Name Lybrandberry Lane	Status New Construction
Begin MP 3.34	Length(miles) 0.72	Begin Termini 3.34
		End Termini 4.06

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: Inactive
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles
Discourage:	N/A
Prohibit:	motorized vehicles
Eliminate	Passenger vehicles

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2170000-3

Road Location: Road access units 675-033, 037, road construction should be moderate to easy over most portions of the road. Unit 037 access is for helicopter landing only. Road location does not cross any areas with side slopes exceeding 67%.

Wetlands: Road location was completed to avoid wetlands there were no mapped wetlands along this location.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: High probability of salvage timber remaining after initial entry.

Soils/Water: The proposed route traverses footslopes and valley sideslopes up to 50 percent gradient along Sunny Creek to access units 675-033 and 037. The proposed route crosses numerous streams (See the stream crossing report). The route also crosses a complex of forested wetlands and uplands. The wetlands occur as stringers and blobs of poorly drained soils interspersed in a matrix of upland soils. The wetlands occur on mountain sideslopes and serve to transfer water downslope. A route located higher on slope could have avoided most of the wetlands but sideslopes exceed 70 percent. (BMP 14.2, 12.5 and 33 CFR BMP 1). Helicopter yarding is considered under alternative 2 in this EIS. Landslide potential is moderate on most of the route (BMP 14.7). Opportunities for erosion will occur mostly at the stream crossings. Use BMPs 14.12, 14.18, and 14.9 to control placement of sidecast material and to control runoff from rock pits along this route. Apply 33 CFR BMPs 2, 4, 8 and 14 to minimize impacts to wetland resources. The 2170-3 meets the requirements for the silvicultural exemption from the 404 permitting process.

Silviculture: Road No. 2117000-3 provides short access to units 675-030, 675-033 and 675-037. Unit 675-030 has potential for 25 acres of release and 51 acres of PCT in 15-20 years. There is potential for 58 acres release and 100 ac. of PCT in 15-20 years in unit 675-033. There is potential for 25 acres of release for unit 675-037.

Wildlife/Botany: A population of the orchid *Platanthera chorisiana* was found below the road outside the unit boundary of 675-030 and is protected by the buffer on Sunny Creek. This plant has been removed from the sensitive species list.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2170000-3

A.) MP 0.20 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient 35 % Structure: 900mm cmp Passage Req'd.: No Timing Dates: 6/15 - 8/7

Narrative: Recommend timing for pink, chum, and coho salmon 6/15 - 8/7. Stream #33-14. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

B.) MP 0.25 AHMU Class IV Channel Type: HC5 BF Width: 0.5m BF Depth: 10cm Substrate: bdrk
Gradient : 35 % Structure 600mm cmp Passage Req'd.: No Timing Dates: 6/15-8/7

Narrative: Stream #33-13. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

C.) MP 0.30 AHMU Class IV Channel Type: HC5 BF Width: 0.5m BF Depth: 10cm Substrate: bdrk
Gradient : 35 % Structure 600mm cmp Passage Req'd.: No Timing Dates: none

Narrative: Stream #33-12. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

D.) MP 0.30 AHMU Class IV Channel Type: HC5 BF Width: 0.5m BF Depth: 10cm Substrate: Gravel ,Cobble
(Gr,Cb)

Gradient 25 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: 6/15 - 8/7

Narrative: Stream #33-11. Road crosses stream at small slide. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

E.) MP 0.40 AHMU Class IV Channel Type: HC5 BF Width: 0.5m BF Depth: 10cm Substrate: Gr,Cb
Gradient : 30 % Structure 600mm cmp Passage Req'd.: No Timing Dates: 6/15-8/7

Narrative: Stream #33-9. Timing for coho, pink, chum in Sunny Cr. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

F.) MP 0.50 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: Gr,Cb
Gradient 30 % Structure: 900mm cmp Passage Req'd.: No Timing Dates: none

Narrative: Recommend timing for coho, pink and chum salmon 6/15 - 8/7. Stream #33-7. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

G.) MP 0.60 AHMU Class III Channel Type: HC5 BF Width: 2m BF Depth: 20cm Substrate: Cobble, Bedrock
(Cb,Bd)

Gradient : 25 % Structure 900mm cmp Passage Req'd.: No Timing Dates: none

Narrative: Stream #33-4. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.



CHOLMONDELEY ROD Road 2170450



- Saltwater
- RMA & Beach No Cut Buffers
- Freshwater
- State & Private Land
- Encumbered National Forest System Land
- Slopes $\geq 72\%$
- Biologically Significant Wetlands

- Unit Pool
- Project Boundary
- Log Transfer Facility
- Source of Base Course & Surface Rock
- Proposed Landing
- Eagle Nest

- Planned New Classified Road Construction
- Planned New Non-Classified Road Construction
- Road 2170450
- AHMU I Stream
- AHMU II Stream
- AHMU III Stream
- AHMU IV Stream
- 40-Ft Contours at 160-ft Intervals

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2170450	Route Name Poison Oak	Status New Construction
Begin MP 0.00	Length(miles) 0.52	Begin Termini 0.00
		End Termini 0.52

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: close road after post sale activities by removing all culverts and waterbarring road

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		
Encourage:	N/A	
Accept:	Hikers, Bicycles	
Discourage:	N/A	
Prohibit:	motorized vehicles	
Eliminate	Passenger vehicles	

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2170450

Road Location: Road access unit 675-030, road construction should be moderate to easy over most portions of the road. Some rock excavation thru small rock outcrops. No areas with sideslopes exceeding 67% were crossed.

Wetlands: Road location was completed to avoid wetlands, there were no wetlands mapped for this road location.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: No post-sale activities planned for this unit.

Soils/Water: The proposed route traverses 20 to 40 percent slopes on the mountain footslope. The route is located within unit 675-030 to provide access to an area isolated from the 2170 road by a cliff. The route crosses minor areas of forested wetlands and three water quality streams within the unit. Landslide potential is moderate on most of the route (BMP 14.7). Opportunities for erosion will occur mostly at the stream crossings. Use BMPs 14.12, 14.18, and 14.9 to control placement of sidecast material and to control runoff from rock pits along this route.

Silviculture: Road number 2170100 provides access to unit 676-592.

Wildlife/Botany: No concerns.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2170450

A.) MP 0.10 AHMU Class III Channel Type:HC5 BF Width: 0.4m BF Depth: 10cm Substrate: bdrk
Gradient 12 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none

Narrative: Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

B.) MP 0.17 AHMU Class III Channel Type: HC5 BF Width: 0.4m BF Depth: 15cm Substrate: bdrk
Gradient : 12 % Structure 600mm cmp Passage Req'd.: No Timing Dates: none

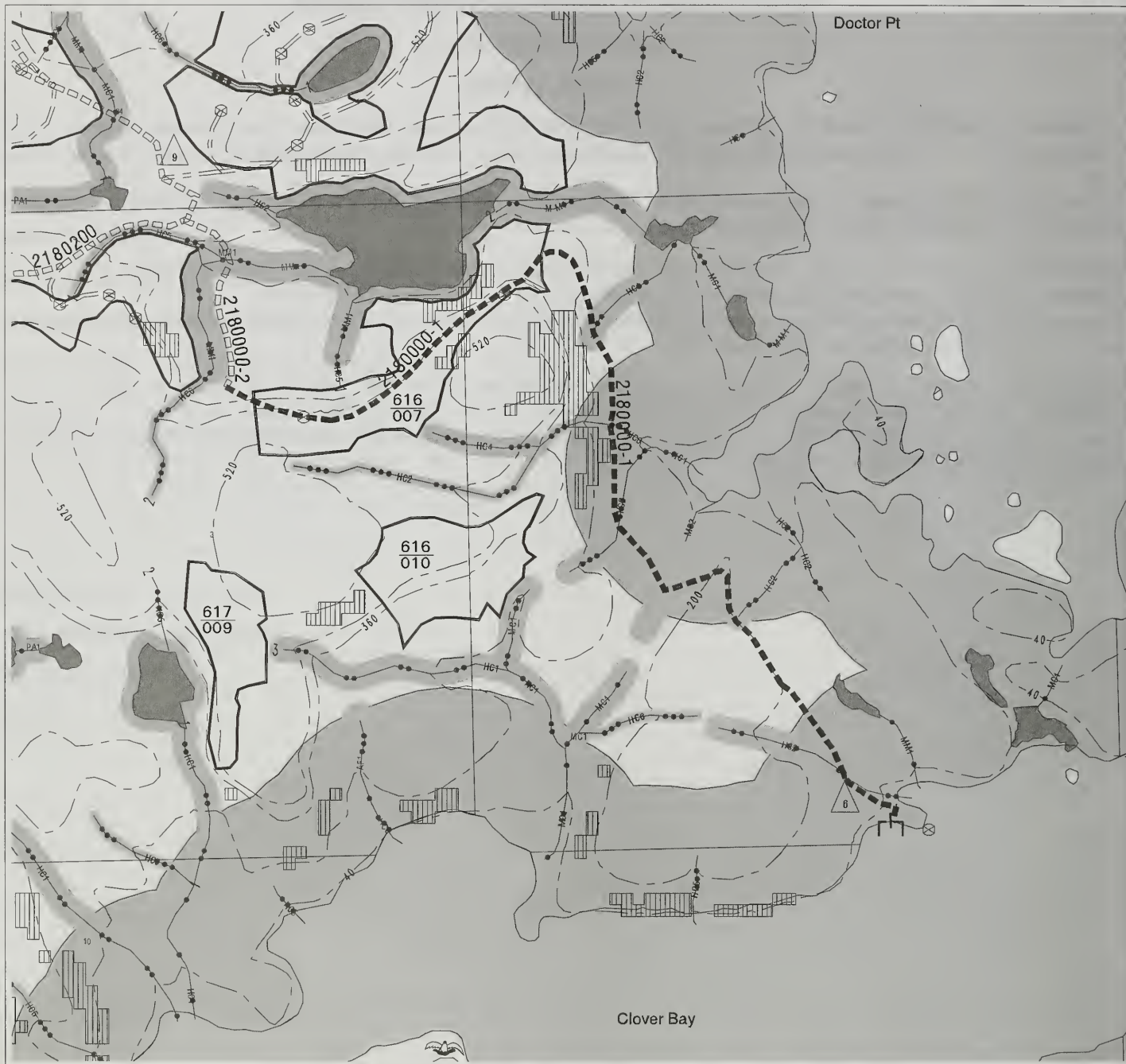
Narrative: Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.

C.) MP 0.29 AHMU Class III Channel Type:HC5 BF Width: 0.5m BF Depth: 10cm Substrate: bdrk
Gradient 15 % Structure:600mm cmp Passage Req'd.: No Timing Dates: none

Narrative: Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work.



CHOLMONDELEY ROD Road 2180000-1



- Saltwater
- RMA & Beach No Cut Buffers
- Freshwater
- State & Private Land
- Encumbered National Forest System Land
- Slopes $\geq 72\%$
- Biologically Significant Wetlands

- Unit Pool
- Project Boundary
- Log Transfer Facility
- Source of Base Course & Surface Rock
- Proposed Landing
- Eagle Nest

- Planned New Classified Road Construction
- Planned New Non-Classified Road Construction
- Road 2180000-1
- AHMU I Stream
- AHMU II Stream
- AHMU III Stream
- AHMU IV Stream
- 40-Ft Contours at 160-ft Intervals

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180000-1	Route Name Clover	Status New Construction
Begin MP 0.00	Length(miles) 1.65	Begin Termini 0.00 LTF
		End Termini 1.65

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use: Silvicultural uses only.

Maintenance Criteria

Operational Maintenance Level	Objective Maintenance Level
2	1

Maintenance Narrative: Remove all drainage structures at completion of silvicultural activities and put road in storage capacity, including scarifying road and seeding.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles
Discourage:	N/A
Prohibit:	Motorized vehicles
Eliminate	Motorized vehicles

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180000-1

Road Location: Road accesses unit 617-009, 616-010, road construction should be moderate to easy over most portions of the road. Road located to accommodate logging systems and still have least impact on the other resources. MP 0.75 thru 0.95 has some sections of steep slopes over 67% where road location goes from bench to bench. Road provides access to proposed LTF in Clover Bay.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources..

Erosion Control:

Rock Pits: As shown on map, no major concerns. No rockpits allowed with in the drinking water watershed for Clover Bay lodge.

Resource Information (If applicable):

Timber/Logging: Medium to high probability of salvage timber available.

Soils/Water: The proposed route accesses unit 617-009 from the LTF through cedar-hemlock-blueberry-skunk cabbage forested wetlands on slopes less than 40 percent gradient and uplands on slopes up to 70 percent gradient. The forested wetlands are on sideslopes and topographic summits of low, bedrock controlled hills. Most soils are less than 40 inches thick and serve to store water and donate water to downstream resources. The 2180-1 road is planned for inactive status. Incidental use by ATVs is anticipated. The 2180 road meets the requirements for the silvicultural exemption from the 404 permitting process. Apply 33 CFR BMPs 2, 4, 5, 6, 8, 11, and 14. A rock pit may need to be located in wetlands, as alternative upland sites are on steep slopes with higher erosion potential and difficult operating conditions (33 CFR BMP 8). Helicopter yarding is considered under alternative 2 and 3 in this EIS.

Silviculture: Road No. 2180000-1 provides short access to units 617-009 and 616-010. Unit 617-009 has potential for 5 acres of planting and 15 acres of PCT in 25+ years. There are no proposed post-harvest activities planned in unit 616-010.

Wildlife/Botany: No concerns. LTF should be far enough from the bald eagle nest not to require any timing restrictions. If the units in the area are helicopter logged, the flight path may require timing, due to the eagle nests in the vicinity, depending on the location of the drop zone.

Lands/Minerals/Geology/Karst:

Visual/Recreation: Along this road care should be taken to design rockpits in a way that blend into the terrain .Avoid square, blocky configurations. Design walls to blend as much as possible into natural slopes such as by tapering walls gradually into road alignment. Floors of rockpits should be re-contoured to some degree with stockpiled overburden. Rockpit floors and benches should be re-vegetated. Rehabilitation plan will identify how floor is to be re-contoured and specify type of vegetation. At LTF maintain as much vegetative buffer as possible between ramp and saltwater, and between operating area and saltwater. After harvest activities are complete, re-contour disturbed areas as much as possible and re-vegetate with native vegetation

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180000-1

Road passes through the domestic water supply watershed for Clover Bay Lodge. Avoid road construction activities within the watershed during very wet periods if the lodge is anchored in Clover Bay.

A.) MP 0.15 AHMU Class II Channel Type:HC2 BF Width: 1.3m BF Depth: 20cm Substrate: bdrk
Gradient 10 % Structure: 900mm cmp Passage Req'd.: Yes Timing Dates: none

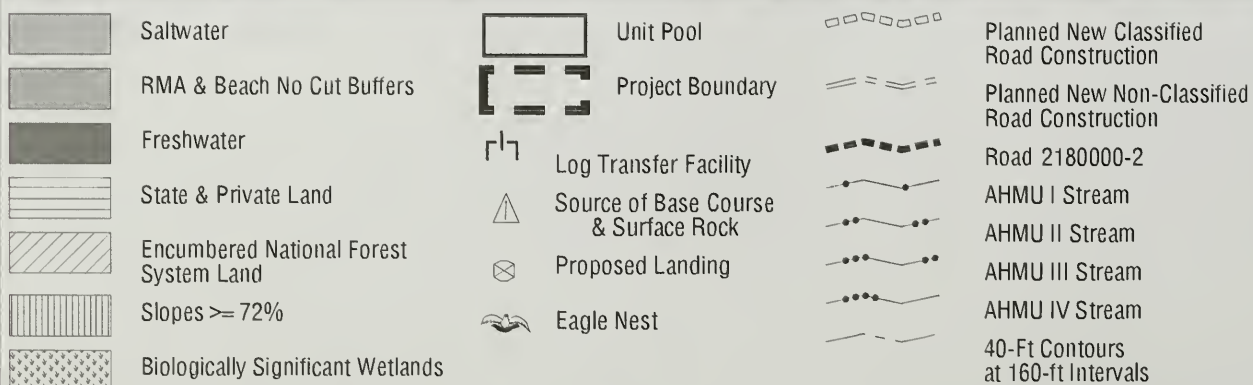
Narrative: Stream not checked for fish, need to verify class after final road location complete. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work

B.) MP 0.85 AHMU Class II Channel Type:MC1 BF Width: 1m BF Depth: 20cm Substrate: bdrk
Gradient : 5 % Structure: log stringer bridge Passage Req'd.: Yes Timing Dates: none

Narrative: Stream not field checked for fish. Need to verify class and passage requirements after final road location complete. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work

C.) MP 1.15 AHMU Class III Channel Type:HC2 BF Width: 0.4m BF Depth: 8cm Substrate: bdrk
Gradient : 10 % Structure Log stringer bridge Passage Req'd.: No Timing Dates: none

Narrative: Stream not field checked for fish. Need to verify class and passage requirements after final road location complete. Use of log stringer bridge encouraged to minimize effects on water quality and to allow construction outside of timing window provided there is no instream work



1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180000-2	Route Name Clover	Status New Construction
Begin MP 1.65	Length(miles) 1.54	Begin Termini 1.65
		End Termini 3.19

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road water-barred appropriately and road surface scarified and seeded

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: inactive
Travel Management Strategies		
Encourage:	N/A	
Accept:	Hikers, Bicycles, ORV's	
Discourage:	Motorized vehicles	
Prohibit:	N/A	
Eliminate	N/A	

Travel Management Narrative. Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180000-2

Road Location: Road accesses unit 617-008, 616-012, road construction should be moderate to easy over most portions of the road. Road located to accommodate logging systems and still have least impact on the other resources. No areas with consistent sideslopes of 67% or greater or unstable soils. Road location is at the base of the steep areas in the section of road West of unit 616-012. Due to change of OGR area after initial recon the OGR area now encroaches on the road R/W. The road that the OGR encroaches on will be closed after all harvest activities are complete with all drainage structures being removed.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources. High value portions of wetlands between units 012 and 008 were avoided.

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: Medium to high probability of salvage timber available.

Soils/Water: About 50 percent of the proposed route crosses forested wetlands and scrub-shrub evergreen wetlands on slopes less than 50 percent gradient. The wetlands are unavoidable as nearly all the areas between harvest units and some harvest units are on wetlands. (BMP 12.5, 14.2, and 33 CFR BMP 1). Helicopter yarding is considered under alternative 2 in this EIS. The wetlands lie on sideslopes of small hills and footslopes and serve to donate and transfer water to downslope resources. The road can be mostly overlay construction in the wetland areas. The very north end of this road segment skirts a tall sedge fen and floodplain riparian area. The riparian area is around a small pond that discharges to a single stream (Monie Creek). Use BMPs 12.5, 14.12 and 14.19 to keep excavated material out of this higher value wetland. Use BMP 14.8 and 33 CFR BMP 8 to locate a rock pit in an upland area. Apply 33 CFR BMPs 2, 4, 5, 6, 7, 8, and 14. The 2180-2 is planned for inactive status. The 2180-2 road meets the requirements for the silvicultural exemption from the 404 permitting process.

Silviculture: Road No. 2180000-2 provides short access to units 616-006, 616-012 and 617-009. Unit 616-006 has no planned post harvest activities planned. Unit 616-012 has potential for 5 acres of planting and 51 acres of PCT in 20-25 years. Unit 617-009 has 5 acres of planting and 15 acres of PCT in 25+ years planned..

Wildlife/Botany: A small section of the road goes near a biologically sensitive wetland at the southeast corner of unit 616-012. This wetland contains numerous sensitive, rare and unusual plants. The species found included *Utricularia intermedia*, *Potamogeton gramineus*, *Ranunculus flammula* var. *filiformis*-a fresh water sponge, *Lycopus uniflorus*, *Carex buxbaumii*, *Malaxis paludosa*, and *Botrychium multifidum*. The sensitive plant species *Senecio moresbiensis* was located in the medium-tall sedge margin of this fen. *Platanthera chorisiana* was also found; however, this plant has now been delisted as a sensitive species. The site is flagged on a nearby tree as the area itself is a treeless microsite. All of these plants as well as the populations are small and easily destroyed. The area itself is now located outside of unit 616-012 and the road location has been moved to skirt around the eastern edge of the fen. The current road location crosses the small creek that drains from the fen into Monie Lake. This creek supports a large population of the plant *Platanthera chorisiana*, which has been removed from the sensitive plant species list. This stream is being crossed with a bridge and has a 200-foot buffer on it. These measures should protect the plant populations. The area of the fen itself however has been frequently used as a helicopter landing site. It is recommended that in the future this location be avoided in favor of alternative less sensitive helispots. The fen, associated creeks and small lake should also be avoided during timber harvest, road location and not used as a staging areas.

Road Management Objectives

Lands/Minerals/Geology/Karst:

Visual/Recreation: Along this road care should be taken to design rockpits in a way that blend into the terrain. Avoid square, blocky configurations. Design walls to blend as much as possible into natural slopes such as by tapering walls gradually into road alignment. Floors of rockpits should be re-contoured to some degree with stockpiled overburden. Rockpit floors and benches should be re-vegetated. Rehabilitation plan will identify how floor is to be re-contoured and specify type of vegetation.

Cultural:

Road Management Objectives

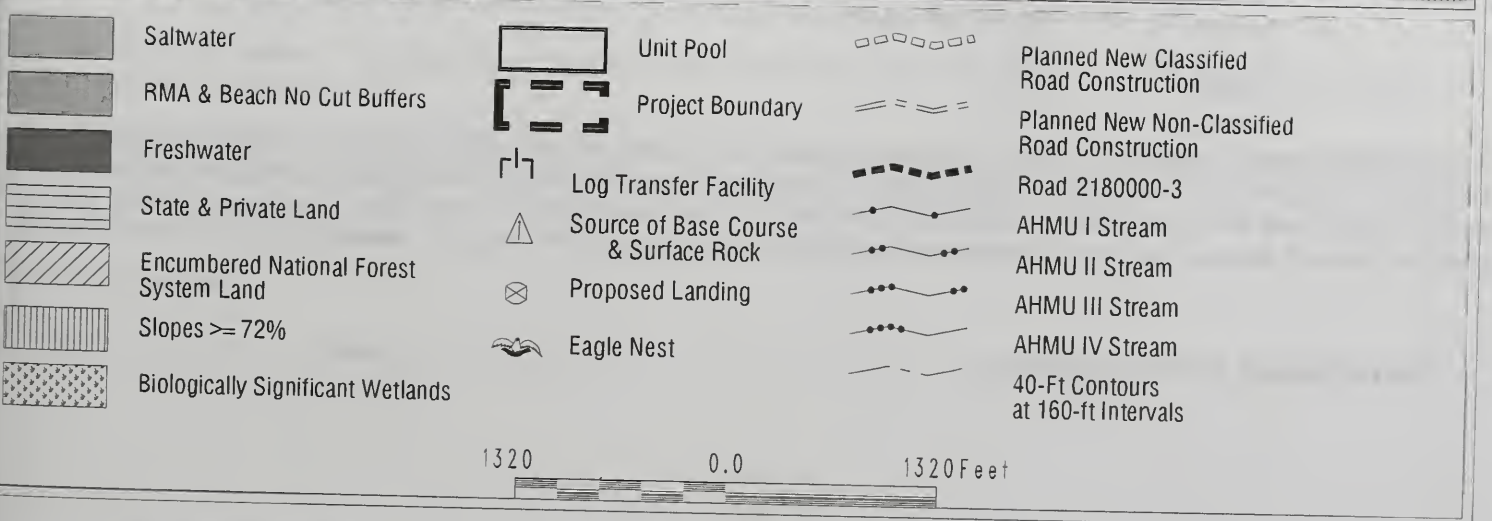
Stream Crossings

Road No. 2180000-2

- A.) MP 0.20** AHMU Class II Channel Type:MM1 BF Width: 1.5m BF Depth: 20cm Substrate: cobble
Gradient 5% Structure: 1800mm cmp Passage Req'd.: Yes Timing Dates: none
Narrative: Crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 ft. Most likely a 1500 - 1800 mm diameter culvert. Road crossed just below the jct. of class III and class II stream so only one crossing will be required(contrary to what is shown on the map).
- B.) MP 0.45** AHMU Class II Channel Type:MC1 BF Width: 4m BF Depth: 0.5m Substrate: bdrk
Gradient : 8% Structure Bridge Passage Req'd.: Yes Timing Dates: 6/15 - 9/1
Narrative: main stream draining lakes above, recommend a small (40') bridge, good approaches and stable banks for spreading sill footing. Timing is for coho and sockeye in Monie Lake.
- C.) MP 0.95** AHMU Class IV Channel Type:HC6 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient 15+% Structure: 450mm cmp Passage Req'd.: No Timing Dates: none
Narrative: Small tributary draining into the lake. Actually class IV rather than III as shown on map.
- D.) MP 1.32** AHMU Class I Channel Type:FP4 BF Width: 10m BF Depth: 1.1m Substrate: gravel
Gradient : 2% Structure Bridge Passage Req'd.: Yes Timing Dates: 6/15 - 8/7
Narrative: Main inlet to Monie Lake, minimum 80 ft. bridge, good alignment and approach grades. Bridge should fit w/o encroachment on the stream. Bridge engineer to check out foundation for sills. High-density coho rearing area on north side of stream. Check final road line for small stream crossings. Timing is for coho, pink, chum, and sockeye. The drainage structures past this point would be removed following completion of activities.



CHOLMONDELEY ROD Road 2180000-3



Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180000-3	Route Name Clover	Status New Construction
Begin MP 3.19	Length(miles) 2.07	Begin Termini 3.19
		End Termini 5.26

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles,
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180000-3

Road Location: Road accesses unit 616-018, 616-022, 616-023, road construction should be moderate to easy over most portions of the road. Road located to accommodate logging systems and still have least impact on the other resources. MP 1.25 to 1.35 has some sections of steep slopes over 67% where road location goes from bench to bench, small areas of full bench road may be needed thru this section in order to meet BMPs

Wetlands: Road location was completed to avoid wetlands (see map) although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: Medium to high probability of salvage timber available.

Soils/Water: The proposed route crosses about 0.1 miles of scrub-shrub evergreen wetlands and about 0.3 miles of forested wetlands on relatively steep slopes. About 0.1 miles is located on slopes over 67 percent gradient and another 0.1 miles is located on slopes over 50 percent gradient. Full bench and end-haul construction (BMP 14.7) and timing (BMP 14.6) may be necessary through steep slope sections. A soil scientist should be involved in the plan-in-hand review to apply specific slope stability mitigation (BMP 14.7). Use BMPs 14.12 and 14.19 to control placement of excavated materials. End-haul materials may need to be deposited in wetlands to avoid steep slopes and visual impact. The scrub-shrub wetlands are located on benches and topographic divides and serve to donate water to downslope resources. The forested wetlands are on sideslopes and serve to transfer water to downslope resources. Avoidance of wetlands is impossible given the grade requirements and steep sideslopes. (BMP 14.2 and 33 CFR BMP 1). It may be necessary to locate a rock pit in wetlands as upland sites are on steep slopes and highly visible to Clarence Strait. (33 CFR BMP 8). Helicopter yarding is considered under alternative 2 of this EIS. The 2180-3 road is to be closed following harvest (BMP 14.22). The 2180-3 meets the requirements for the silvicultural exemption from the 404 permitting process. Apply 33 CFR BMPs 2, 4, 5, 6, 8, 11, and 14.

Silviculture: Road No. 2180000-3 provides short access to units 616-021, 616-018, 616-022, and 616-023. Unit 616-021 has potential of 60 acres PCT in 20-25 years. Unit 616-018 has potential for 5 acres planting and 34 acres PCT in 25+ years. Unit 616-022 has potential for 10 acres of planting and survival surveys and 62 acres of PCT in 25+ years. Unit 616-023 has potential for 20 acres of PCT in 25+ years

Wildlife/Botany: As the road goes around the west end of Monie Lake it goes through an area that has a history of known heavy deer/bear/wolf use. Red-tail hawks and an osprey have been reported in the area as well. Upslope from the planned road location Pacific Yew (*Taxus brevifolia*) trees were located. They are between the road location and unit 616-021. The Pacific Yew trees are protected under the Pacific Yew Tree Act of 1992. This act states;

- A) Inventory and maintain existing populations of Pacific Yew trees,
 - a. Locate and document the location of any existing plants during Forest Service project activities,
- B) If found, implement site-specific silvicultural prescriptions to maintain Pacific Yew regeneration capabilities and presence on the site, and
- C) Retain Pacific Yew during timber stand improvement activities, such as precommercial thinning, wherever feasible (Pacific Yew Act, January 3, 1992, 16 USC 4804; Forest Plan Chapter 4-page 95).

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

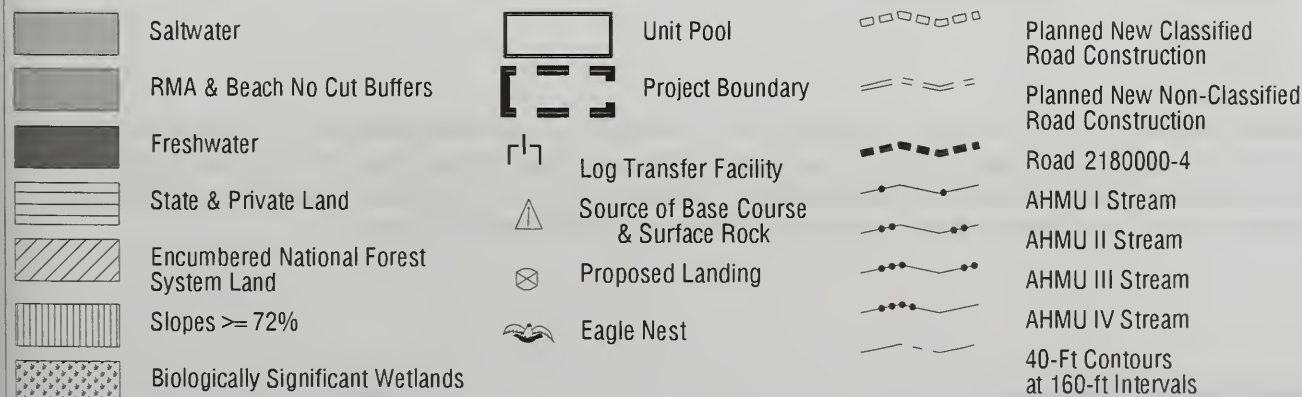
Stream Crossings

Road No. 2180000-3

- A.) MP 0.10** AHMU Class I Channel Type:MM1 BF Width: 3m BF Depth: 30cm Substrate: cobble
Gradient 5 % Structure: 2400mm cmp Passage Req'd.: Yes Timing Dates: 6/15 - 8/7
Narrative: Crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 ft. Timing is for coho, sockeye, pink, and chum.
- B.) MP 0.18** AHMU Class I Channel Type:MM1 BF Width: .5m BF Depth: 15cm Substrate: cobble
Gradient : 5 % Structure 900mm cmp Passage Req'd.: Yes Timing Dates: 6/15 - 8/7
Narrative: Crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 ft
- C.) MP 0.26** AHMU Class I Channel Type:MM1 BF Width: 3m BF Depth: 30cm Substrate: cobble
Gradient 6 % Structure: 900mm cmp Passage Req'd.: Yes Timing Dates: 6/15 - 8/7
Narrative: Crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 ft.
- D.) MP 0.75** AHMU Class III Channel Type:HC2 BF Width: 2m BF Depth: 30cm Substrate: bdrk
Gradient : 10 % Structure 1200mm cmp Passage Req'd.: NO Timing Dates: none
Narrative:
- E.) MP 1.20** AHMU Class III Channel Type:HC6 BF Width: 9m BF Depth: 100 Substrate: large. cobble
Gradient : 17 % Structure Bridge Passage Req'd.: Yes Timing Dates: 6/15 - 9/1
Narrative: Crossing 100 feet above the change to class I. Recommend 3000 mm cmp buried .6m at outlet and laid in flat; or a bridge. Timing is for coho.
- F.) MP 1.65** AHMU Class IV Channel Type: HC5 BF Width: 1.5m BF Depth: 20cm Substrate: bdrk
Gradient 25 % Structure: 1200mm cmp Passage Req'd.: No Timing Dates: none
Narrative: Solid rock on both sides of notch at the crossing.
- G.) MP 1.95** AHMU Class IV Channel Type:HC5 BF Width: 1m BF Depth: 15cm Substrate: bdrk
Gradient : 35 % Structure: 900mm cmp Passage Req'd.: NO Timing Dates: none
Narrative:



CHOLMONDELEY ROD Road 2180000-4



1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180000-4	Route Name Clover	Status New Construction
Begin MP 5.26	Length(miles) 1.93	Begin Termini 5.26
		End Termini 7.19

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		
Encourage:	N/A	
Accept:	Hikers, Bicycles	
Discourage:	N/A	
Prohibit:	N/A	
Eliminate	N/A	

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180000-4

Road Location: Road accesses unit 616-024, , 123, 616-023, road construction should be moderate to easy over most portions of the road. Road located to accommodate logging systems and still have least impact on the other resources.

Wetlands: Road location was completed to avoid wetlands(see map) although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources.

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: Medium to high probability of salvage timber available.

Soils/Water: The proposed 2180-4 contours on 20 to 50 percent sideslopes with no sections on slopes over 67 percent gradient. The road crosses forested wetlands and upland complexes and about 0.1 miles of scrub-shrub evergreen wetlands. All wetlands crossed are located on the shoulder slope near topographic summits. The wetlands serve to donate water to downslope resources. Due to grade requirements the wetlands are unavoidable. Helicopter yarding is considered in alternative 2 and 3 of this EIS (BMPs 12.5 and 33 CFR BMP 1). It may be necessary to locate a rock pit in wetlands as upland sites are on steep slopes and highly visible to Clarence Strait. (33 CFR BMP 8). Slope stability appears to be good along most sections with steeper slopes located near the stream crossing in unit 616-024 (BMP 14.7). A soil scientist should be involved in a plan-in-hand review of this road to determine the specific mitigation (BMP 14.7). Use BMPs 12.5, 14.12, and 14.19 to control excavation of sidecast material in steep areas and wetlands. The 2180-4 is planned for closure following harvest (BMP 14.22) and meets the requirements for the silvicultural road exemption from the 404 permitting process. Apply 33 CFR BMPs 2, 4, 5, 8, and 14.

Silviculture: Road number 2180000-4 provides short access to units 616-023, 616-123, 616-024 and access larger than .5 of a mile for unit 616-025. Unit 616-023 has potential for 20 acres PCT in 25 years. Unit 616-123 has potential for 12 acres release and 35 acres PCT in 20-25 years. Unit 616-024 has potential for 25 acres of PCT in 25+ years. There are no planned post sale activities in unit 615-025.

Wildlife/Botany: No concerns.

Lands/Minerals/Geology/Karst:

Visual/Recreation: Avoid sidecasting of overburden and excavated rock on downhill slope particularly where road passes through unit.

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180000-4

A.) MP 0.08 AHMU Class III Channel Type: HC5 BF Width: 1.5m BF Depth: 20cm Substrate: bdrk
Gradient 25 % Structure: 900mm cmp Passage Req'd.: No Timing Dates: none
Narrative:

B.) MP 0.70 AHMU Class III Channel Type: HC5 BF Width: 3m BF Depth: 30cm Substrate: bdrk
Gradient : 35 % Structure 900mm cmp Passage Req'd.: No Timing Dates: none
Narrative: t

C.) MP 0.80 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient 25 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative:

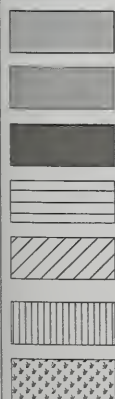
D.) MP 1.25 AHMU Class III Channel Type: HC6 BF Width: .5m BF Depth: 60mm Substrate: bdrk
Gradient : 15 % Structure 450mm cmp Passage Req'd.: NO Timing Dates: none
Narrative: may actually be class IV

E.) MP 1.60 AHMU Class IV Channel Type: HC5 BF Width: 1.5m BF Depth: 25cm Substrate: bdrk
Gradient : 18 % Structure 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative:

F.) MP 1.90 AHMU Class I V Channel Type: HC5 BF Width: 0.5m BF Depth: 10cm Substrate: bdrk
Gradient 35 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative:



CHOLMONDELEY ROD Road 2180200



Saltwater

RMA & Beach No Cut Buffers

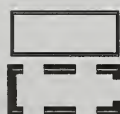
Freshwater

State & Private Land

Encumbered National Forest System Land

Slopes $\geq 72\%$

Biologically Significant Wetlands



Unit Pool

Project Boundary



Log Transfer Facility



Source of Base Course & Surface Rock



Proposed Landing



Eagle Nest



Planned New Classified Road Construction

Planned New Non-Classified Road Construction

Road 2180200

AHMu I Stream

AHMu II Stream

AHMu III Stream

AHMu IV Stream

40-Ft Contours

at 160-ft Intervals

1320

0.0

1320 Feet



Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180200	Route Name Thimble	Status New Construction
Begin MP 0.00	Length(miles) 0.58	Begin Termini 0.00
		End Termini 0.58

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles,
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180200

Road Location: Road located to accommodate logging systems and still have least impact on the other resources. No significant areas of steep slopes or unstable soils were crossed on this location.

Wetlands: Road location was completed to avoid wetlands (see map) although wetlands were unavoidable on some most of the location due to safety, engineering design constraints and considerations for other resources..

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed 2180200 road skirts along the edge of a scrub-shrub evergreen wetland and upland ecotone. The bulk of the road is located on uplands, just inside the timber. (BMP 12.5 and 33 CFR BMP 1). Helicopter yarding is considered under alternative 2 in this EIS. Grades are moderate and slopes less than 40 percent gradient. No streams are crossed. Use BMPs 12.5, 14.12, and 14.19 to keep sidecast material and fill out of the scrub-shrub wetland. Apply 33 CFR BMPs 3, 4, 5, 6, 8, and 14. The 200 road is planned for closure following harvest and meets the requirements for the silvicultural road exemption from the 404 permitting process. **Silviculture:** Road no. 2180200 provides short access to unit 616-008. Unit 616-008 has potential for 5 acres of planting and 36 acres of PCT in 25+ years.

Wildlife/Botany: This road passes just to the south of a small fen that flanks the lake at the southeastern end of unit 616-012. This fen is rich in plant diversity. Numerous sensitive, rare and unusual plants occur there. Species found in the area include *Utricularia intermedia*, *Potamogeton gramogeton*, *Ranunculus flammula* var. *filiformis*, *Lycopus uniflorus*, *Carex buxbaumii*, *Malaxus paludosa*, *Botrychium multifidum* and *Senecio moresbiensis*. *Platanthera chorisiana* was also found; however, this plant has been removed from the sensitive plant species list. This fen will be surrounded by road on the south and east and a harvest unit (616-012) on the north. The creek, which flows from the fen, supports a large population of the sensitive plant *Platanthera chorisiana*. This stream has been buffered 120 feet for fish concerns and will be crossed with a bridge. The middle-tall sedge margin of the fen contains only the second known population on Prince of Wales Island of the sensitive species *Senecio moresbiensis*, the Queen Charlotte butterweed. This area should be excluded from any potential harvest or road building. These mitigation measures should protect the plant populations. The fen area, although not inside a harvest unit, has been a popular helispot. It is recommended that during future work this location be avoided and alternative helispots used. The fen, associated creeks and small lake should be avoided during timber harvest and road building and not used as a staging area.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

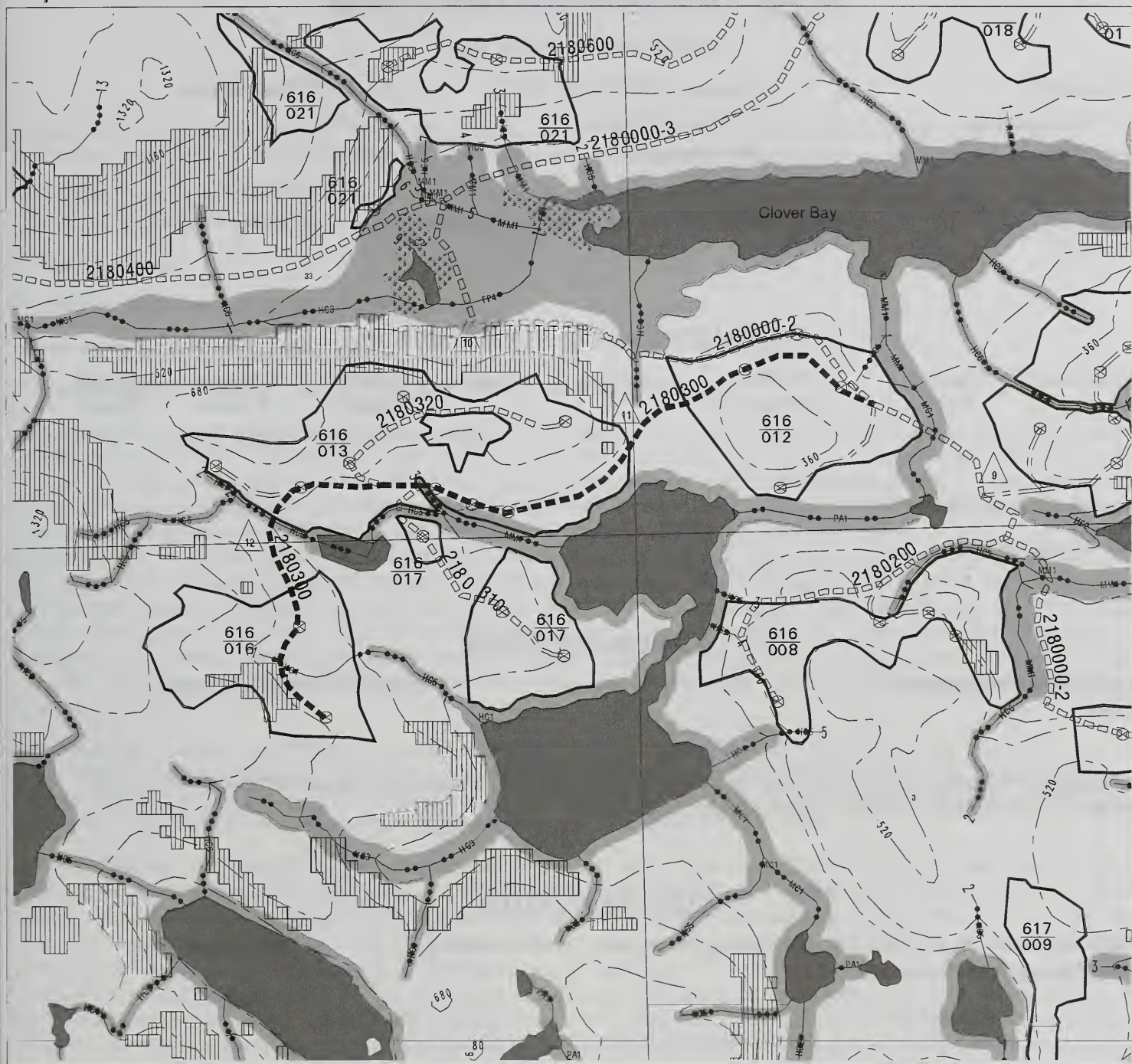
Stream Crossings

Road No. 2180200

No streams crossed on this location



CHOLMONDELEY ROD Road 2180300



Saltwater
RMA & Beach No Cut Buffers
Freshwater
State & Private Land
Encumbered National Forest System Land
Slopes $\geq 72\%$
Biologically Significant Wetlands



Unit Pool
Project Boundary



Log Transfer Facility



Source of Base Course & Surface Rock



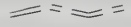
Proposed Landing



Eagle Nest



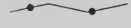
Planned New Classified Road Construction



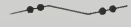
Planned New Non-Classified Road Construction



Road 2180300



AHMU I Stream



AHMU II Stream



AHMU III Stream



AHMU IV Stream



40-Ft Contours at 160-ft Intervals

1320

0.0

1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180300	Route Name Red	Status New Construction
Begin MP 0.00	Length(miles) 1.43	Begin Termini 0.00
		End Termini 1.43

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: Upon completion of silvicultural activities all drainage structures are to be removed. Road waterbarred appropriately and road surface scarified and seeded

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
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Travel Management Strategies	Encourage: N/A
	Accept: Hikers, Bicycles
	Discourage: N/A
	Prohibit: N/A
	Eliminate: N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180300

Road Location: Road located to accommodate logging systems and still have least impact on the other resources. No significant areas of steep ground (>67%) or unstable soils were encountered on this location.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources..

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed 2180300 road crosses a small divide and then climbs steadily through unit 616-013 to access a landing in unit 616-016. The route is located mostly on uplands, but crosses a few stringers of forested wetlands adjacent to small streamcourses. There are several short sections on sideslopes of more than 50 percent gradient and a few sections on slopes over 67 percent gradient. Alternative routes would affect more wetlands but on gentler slopes an alternative route may be advantageous given the landslide potential and steep gradient of the proposed route. (BMPs 12.5, 14.2, 14.7, and 33 CFR BMP 1). Helicopter yarding is considered under alternative 2 of this EIS. Use BMPs 14.12 and 14.19 to control sidecast material placements. Use full bench construction if necessary to reduce landslide risk. (BMP 14.7). A short sedge fen wetland is present adjacent to the northeast corner of unit 016. The road proposed route skirts the edge of this wetland. The wetland appears to process a large volume of hillslope water, so construction adjacent to the wetland should provide adequate cross drains to maintain circulation into the wetland. Apply 33 CFR BMPs 1, 2, 4, 5, 6, 8, and 14. The 300 road will be closed following harvest (BMP 14.22) and meets the requirements for the silvicultural exemption from the 404 permitting process.

Silviculture: Road no. 2180300 provides short access (> .3 mile) for units 616-012, 616-013, 616-016, and 616-017. Unit 616-012 has potential for 5 acres of planting and 51 acres of PCT in 20-25 years. Unit 616-013 has potential for 5 acres of planting and 65 acres of PCT in 20-25 years. Unit 616-016 has potential for 5 acres planting and 36 acres PCT in 25+ years. Unit 616-017 has potential for 5 acres planting and 12 acres PCT in 25+ years.

Wildlife/Botany: This road has a spur off of it that accesses the southern portion of unit 616-022. This spur road is very close to the northern edge of the biologically significant wetland. In this wetland several species of sensitive, rare or unusual plants were discovered. The species found include *Utricularia intermedia*, *Potamogeton gramineus*, *Ranunculus flammula* var. *filiformis*, *Lycopus uniflorus*, *Carex buxbaumii*, *Malaxus paludosa*, *Botrychium multifidum* and *Senecio moresbiensis*. The populations are small and the species easily destroyed. *Platanthera chorisiana* has also been found; however, this plant has been removed from the sensitive plant species list. This fen is not inside a harvest unit but it has been selected in the past as a favorite helispot. It is recommended that during future activity this location be avoided for repeated helicopter landings. The fen, and associated creeks and small lake, should be avoided during timber harvest and road building and not be used as a staging area. The *Senecio*, which was found, is only the second known population to exist on Prince of Wales Island. It is located at the northern edge of the wetland closest to the spur road. This area should be protected to the greatest degree possible from all impacts. It is recommended that the spur road be dropped or moved uphill to increase the distance of it from the population of sensitive plants.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180300

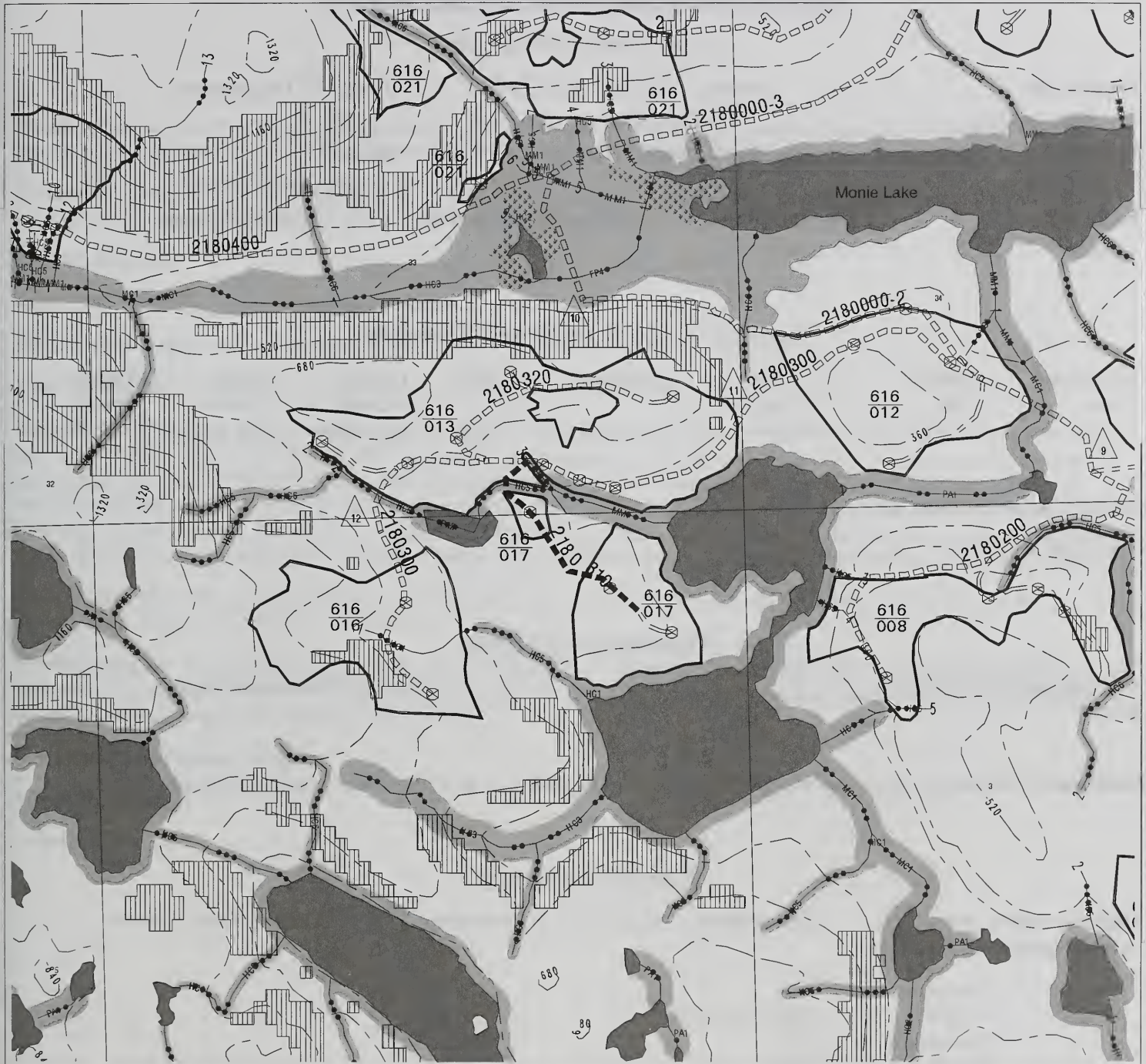
A.) **MP 0.95** AHMU Class III Channel Type:HC5 BF Width: 1m BF Depth: 20cm Substrate: bdrk
Gradient 25 % Structure 900mm cmp Passage Req'd.: No Timing Dates: none
Narrative:

B.) **MP 1.35** AHMU Class III Channel Type: HC5 BF Width: 1m BF Depth: 20cm Substrate: bdrk
Gradient : 25 % Structure 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative: .

C.) **MP 1.40** AHMU Class IV Channel Type:HC5 BF Width: 1m BF Depth: 20cm Substrate: bdrk
Gradient 25% Structure 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative:



CHOLMONDELEY ROD Road 2180310



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Slopes $\geq 72\%$

Biologically Significant Wetlands



Unit Pool

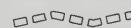
Project Boundary

Log Transfer Facility

Source of Base Course & Surface Rock

Proposed Landing

Eagle Nest



Planned New Classified Road Construction

Planned New Non-Classified Road Construction

Road 2180310

AHMU I Stream

AHMU II Stream

AHMU III Stream

AHMU IV Stream

40-Ft Contours at 160-ft Intervals

1320

0.0

1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180310	Route Name Red I	Status New Construction
Begin MP 0.00	Length(miles) 0.36	Begin Termini 0.00
		End Termini 0.36

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: close road after post sale activities by removing all culverts and waterbarring road

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180310

Road Location: Road located to accommodate logging systems in unit 616-017 and still have least impact on the other resources. No significant areas of steep ground (>67%) or unstable soils were encountered on this location.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on some portions of the location due to safety, engineering design constraints and considerations for other resources..

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed 310 road location traverses slopes less than 30 percent gradient and crosses forested wetlands and scrub-shrub evergreen wetlands. The wetlands lie on topographic summits and sideslopes and serve to donate water to downslope resources. The road construction should be mostly rock overlay with minor cuts and fills. Unit 017 lies on forested wetlands and access via uplands is not possible. Helicopter yarding is considered under alternative 2 in this EIS. Landslide potential is low (BMP 14.7). Apply 33 CFR BMPs 2, 4, 5, 8, and 14. The 310 road will be closed to vehicular traffic following harvest and meets the requirements for the silvicultural road exemption from the 404 permitting process.

Silviculture: Road no. 2180310 provides short access to unit 616-017. Unit 616-017 has potential for 5 acres of planting and 12 acres of PCT in 25+ years.

Wildlife/Botany: A population of *Platanthera chorisiana* was found below the end of the road; however, this plant is no longer listed as a sensitive species. The plants are outside of the unit boundary and within a lake buffer. These mitigations should be enough to provide protection to the plants.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180310

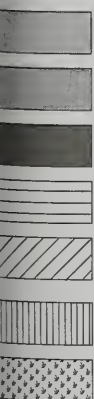
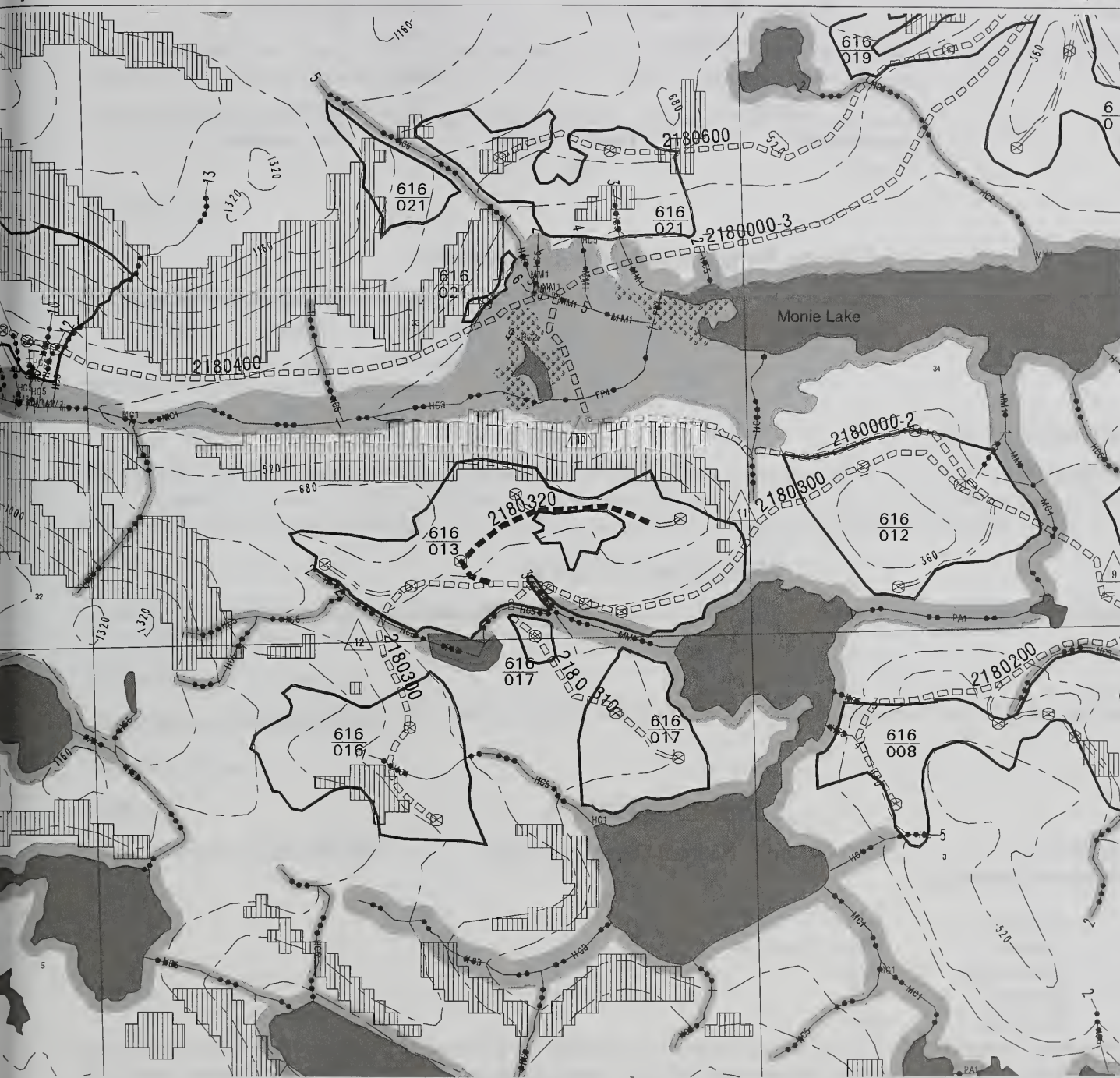
A.) MP 0.10 AHMU Class III Channel Type:HC2 BF Width: 1.5m BF Depth: 25cm Substrate: bdrk

Gradient 9% Structure 1200mm cmp Passage Req'd.: Yes Timing Dates: none

Narrative: crossing on relatively flat area, overlay construction. Oversize cmp to accommodate burying 1-2 ft. Ensure road is outside of buffer on pond (PA2 wetland).



CHOLMONDELEY ROD Road 2180320



Saltwater

RMA & Beach No Cut Buffers

Freshwater

State & Private Land

Encumbered National Forest System Land

Slopes $\geq 72\%$

Biologically Significant Wetlands



Unit Pool

Project Boundary

Log Transfer Facility

Source of Base Course & Surface Rock

Proposed Landing

Eagle Nest



Planned New Classified Road Construction

Planned New Non-Classified Road Construction

Road 2180320

AHMU I Stream

AHMU II Stream

AHMU III Stream

AHMU IV Stream

40-Ft Contours at 160-ft Intervals

1320

0.0

1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180320	Route Name Red II	Status New Construction
Begin MP 0.00	Length(miles) 0.38	Begin Termini 0.00
		End Termini 0.38

General Design Criteria and Elements

Functional Class L	Service Life LI	Traffic Service Level D	Surface rock	Width 14ft.	Critical Vehicle Log Truck	Design Vehicle Log Truck	Design Speed 10
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Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: close road after post sale activities by removing all culverts and waterbarring road

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180320

Road Location: Road located to accommodate logging systems and still have least impact on the other resources. No significant areas of steep ground (>67%) or unstable soils were encountered on this location.

Wetlands: Road location was completed to avoid wetlands, there are no mapped wetlands on this location.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed route is located entirely on uplands with sideslopes of 30 to 50 percent gradient. (BMPs 12.5 and 14.2). Landslide potential is high for the first 0.1 miles. Use BMPs 14.7, 14.12, and 14.19 to control sidecast and fill placement to avoid causing a landslide. The 320 road is proposed for closure following harvest (BMP 14.22).

Silviculture: Road no. 2180320 provides short access to unit 616-013. Unit 616-013 has potential of 5 acres of planting and 65 acres of PCT in 20-25 years.

Wildlife/Botany: No concerns.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

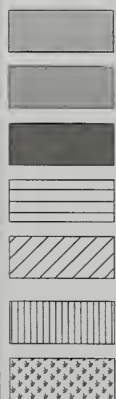
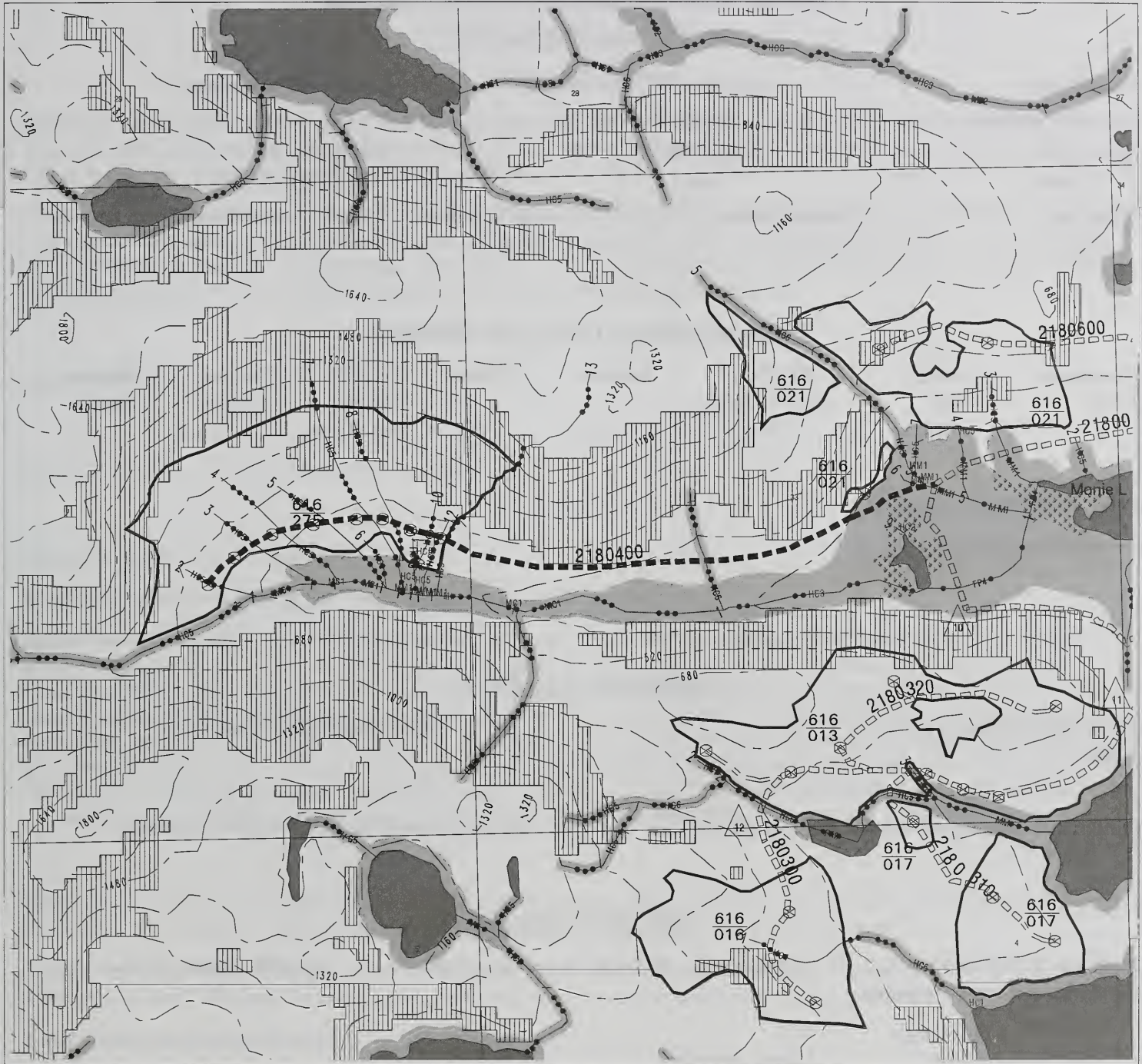
Stream Crossings

Road No. 2180320

No streams crossings encountered on this road location



CHOLMONDELEY ROD Road 2180400



- Saltwater
- RMA & Beach No Cut Buffers
- Freshwater
- State & Private Land
- Encumbered National Forest System Land
- Slopes $\geq 72\%$
- Biologically Significant Wetlands



- Unit Pool
- Project Boundary



- Log Transfer Facility



- Source of Base Course & Surface Rock



- Proposed Landing



- Eagle Nest



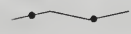
- Planned New Classified Road Construction



- Planned New Non-Classified Road Construction



- Road 2180400



- AHMU I Stream



- AHMU II Stream



- AHMU III Stream



- AHMU IV Stream



- 40-Ft Contours at 160-ft Intervals

1320

0.0

1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180400	Route Name Alsike	Status New Construction
Begin MP 0.00	Length(miles) 1.19	Begin Termini 0.00
		End Termini 1.19

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: remove all drainage structures and close road upon completion of silvicultural activities.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles,
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180400

Road Location: Road accesses unit 616-275, road construction should be moderate to easy over most portions of the road. Road located to accommodate logging systems and still have least impact on the other resources. Location stays below of any steep(>67%) ground, no unstable soils encountered.

Wetlands: Road location was completed to avoid wetlands (see map) although small portions of wetlands were unavoidable on a part of the location due to practicality, safety, engineering design constraints and considerations for other resources. Only wetlands are near the end of the road, these may be able to be avoided depending on final location of the last logging system landing. Work with logging engineer to try to avoid landings in the wetlands.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: Medium to high probability of salvage timber available.

Soils/Water: The proposed route follows the footslope and edge of the floodplain on sideslopes less than 40 percent gradient. Landsliding is not a concern (BMPs 14.7). Most of the route is located on an upland and forested wetland complex. (BMP 12.5). The route skirts the edge of a tall sedge fen wetlands near the junction with the 2180 road. This wetland transfers and stores hillslope and creek water for release downstream. The footslope soils serve to transfer water to downslope resources. Use BMPs 14.12, 14.19, 12.5, and 14.18 to keep excavated material out of wetlands. Use BMPs 14.9, 14.11 and 14.17 to maintain hillslope drainage patterns. The 400 road is to be closed to vehicular traffic following harvest (BMP 14.22). Helicopter yarding is considered under alternative 2 in this EIS. The 400 road meet the requirements for the silvicultural exemption from the 404 permitting process. Apply 33 CFR BMPs 1, 2, 3, 4, 5, 6 7, 8 and 14.

Silviculture: Road no. 2180400 provides access to unit 616-275 and to a portion of unit 616-021. Unit 616-275 has potential for 77 acres PCT in 20-25 years. Unit 616-021 has potential for up to 58 ac. PCT in 20-25 years.

Wildlife/Botany: This road begins in an area of known high deer/bear/wolf use. Red-tail hawks and osprey have been seen in the area as well. The road location appears to have been relocated to avoid direct impacts to this area.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180400

A.) MP 0.40 AHMU Class III Channel Type: HC6 BF Width: 0.5m BF Depth: 10cm Substrate: cobbles
Gradient 10 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: 6/15 - 8/15

Narrative: Timing may not be necessary depending on proximity of final road location to the main stream below.

B.) MP 0.75 AHMU Class IV Channel Type: HC5 BF Width: 1.5 m BF Depth: 20cm Substrate: bdrk
Gradient : 25 % Structure 900mm cmp Passage Req'd.: No Timing Dates: none

Narrative:

C.) MP 0.80 AHMU Class IV Channel Type: HC5 BF Width: 1 m BF Depth: 15 cm Substrate: bdrk
Gradient 25 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none

Narrative:

D.) MP 0.90 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 10cm Substrate: bdrk
Gradient : 20 % Structure 600mm cmp Passage Req'd.: NO Timing Dates: none

Narrative:

E.) MP 0.95 AHMU Class IV Channel Type: HC5 BF Width: 2m BF Depth: 20cm Substrate: bdrk
Gradient : 15 % Structure 900mm cmp Passage Req'd.: No Timing Dates: none

Narrative:

F.) MP 1.02 AHMU Class IV Channel Type: HC5 BF Width: 1.5m BF Depth: 15cm Substrate: bdrk
Gradient 15 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none

Narrative:

G.) MP 1.05 AHMU Class IV Channel Type: HC5 BF Width: 1.5m BF Depth: 20cm Substrate: bdrk
Gradient : 15 % Structure: 600mm cmp Passage Req'd.: NO Timing Dates: none

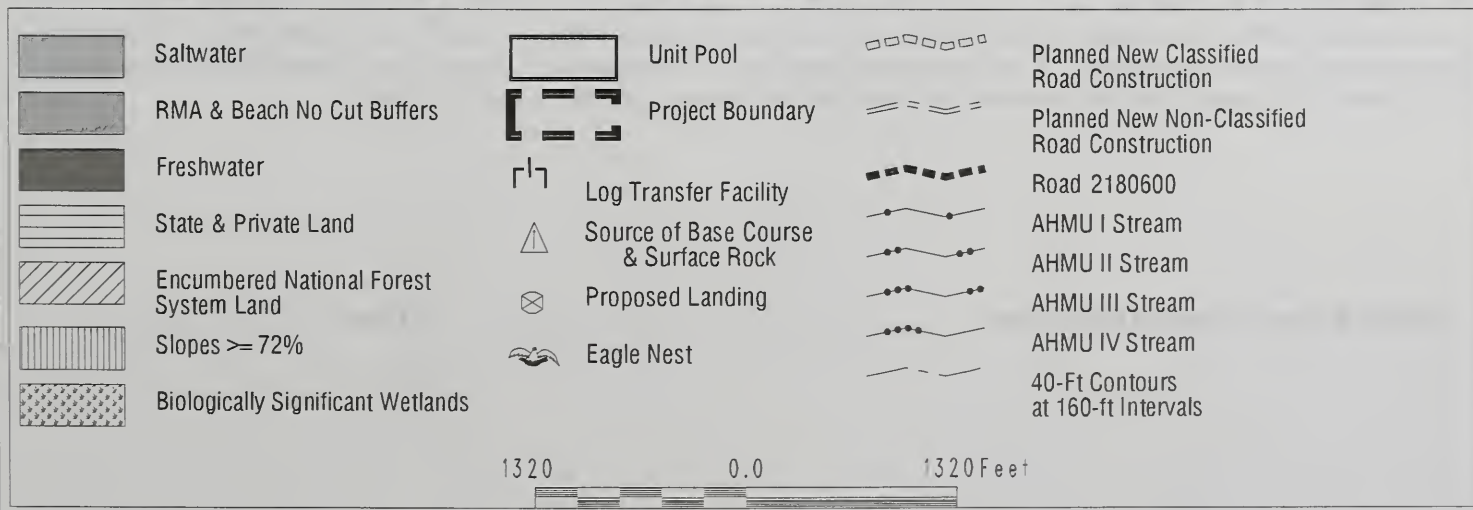
Narrative:

H.) MP 1.08 AHMU Class IV Channel Type: HC5 BF Width: 1 m BF Depth: 15cm Substrate: bdrk
Gradient : 15 % Structure: 600mm cmp Passage Req'd.: NO Timing Dates: none

Narrative:



CHOLMONDELEY ROD Road 2180600



Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180600	Route Name Springbank	Status New Construction
Begin MP 0.00	Length(miles) 0.99	Begin Termini 0.00
		End Termini 0.99

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: remove all drainage structures and close road upon completion of silvicultural activities.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles,
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed).

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180600

Road Location: Road located to accommodate logging systems and still have least impact on the other resources. Location stays below of any steep (>67%) ground, no unstable soils encountered. One section of steep ground at MP 0.60 may require +/- 500 feet of full bench construction. Alternate route location may be feasible and shorten road length by starting road further to the SW on the mainline rd. 2180000.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on some portions of the location due to practicality, safety, engineering design constraints and considerations for other resources. Only wetlands are near the beginning of the road, these may be able to be avoided depending on final location of the junction with 2180000. Work with logging engineer to try to avoid landings in the wetlands.

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed route traverses mostly forested upland on slopes of 30 to 70 percent gradient. The first 0.2 miles crosses forested wetlands and scrub-shrub evergreen wetlands that lie on a topographic summit and bench. Due to grade requirements the wetlands are unavoidable. Helicopter yarding is considered under alternative 2 and 3 in this EIS. Landslide potential is relatively high for the last 0.4 miles of the location. Sideslopes range from 40 to 70 percent and full bench and end-haul construction may be necessary for about 500 feet on slopes over 60 percent gradient. (BMP 14.7, 14.12, and 14.19) Disposal of end-haul materials will likely have to occur in wetlands as stable upland sites are limited. A Soil Scientist should be involved in the plan-in-hand review of this road to apply specific landslide mitigation (BMP 14.7). The 600 road will be closed to vehicular traffic following harvest (BMP 14.22). The 600 road meets the requirements for the silvicultural road exemption from the 404 permitting process. Apply 33 CFR BMPs 4, 5, 6, 8, and 14.

Silviculture: Road no. 2180600 provides access to unit 616-021 and 616-019. Unit 616-021 has potential for 58 acres PCT in 20-25 years. Unit 616-019 has potential for 23 acres PCT in 25+ years.

Wildlife/Botany: No concerns. There have been Pacific Yew trees found in the area below the unit boundary. The Forest Plan Standards and Guidelines, (chapter 4, page95), says that populations of Pacific Yew are to be located and documented and if found to implement silvicultural practices which will maintain Pacific Yew regeneration.

Lands/Minerals/Geology/Karst:

Visual/Recreation:

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180600

A.) MP 0.30 AHMU Class III Channel Type: HC6 BF Width: 1.5m BF Depth: 30cm Substrate: bdrk
Gradient 35 % Structure: 900mm cmp Passage Req'd.: No Timing Dates: none

Narrative:



CHOLMONDELEY ROD Road 2180700



- Saltwater
- RMA & Beach No Cut Buffers
- Freshwater
- State & Private Land
- Encumbered National Forest System Land
- Slopes $\geq 72\%$
- Biologically Significant Wetlands

- Unit Pool
- Project Boundary
- Log Transfer Facility
- Source of Base Course & Surface Rock
- Proposed Landing
- Eagle Nest

- Planned New Classified Road Construction
- Planned New Non-Classified Road Construction
- Road 2180700
- AHMU I Stream
- AHMU II Stream
- AHMU III Stream
- AHMU IV Stream
- 40-Ft Contours at 160-ft Intervals

1320 0.0 1320 Feet

Road Management Objectives

Project/EIS Cholmondeley	System Prince of Wales	Land Use Designation TM
Route No. 2180700	Route Name Tufted	Status New Construction
Begin MP 0.00	Length (miles) 0.62	Begin Termini 0.00
		End Termini 0.62

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	rock	14ft.	Log Truck	Log Truck	10

Intended Purpose/Future Use

Silvicultural activities

Maintenance Criteria

Operational Maintenance Level	2	Objective Maintenance Level	1
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Maintenance Narrative: remove all drainage structures and close road upon completion of silvicultural activities.

Operation Criteria

Highway Safety Act: No	Jurisdiction: National Forest Ownership	AFRPR Status: closed
Travel Management Strategies		

Encourage:	N/A
Accept:	Hikers, Bicycles,
Discourage:	N/A
Prohibit:	N/A
Eliminate	N/A

Travel Management Narrative: Use by trucks is expected to be minimal for silvicultural purposes. This road system is not connected to any public or community road systems or to any ferry system terminal. Road system to be closed to motorized vehicles during and after initial entry. After silvicultural activities are completed (3-4 years after completion of initial sale) road will have all drainage structures removed and road put into storage (AFRPR status of closed)..

District Ranger Approval (signature) _____ **Date:** _____

Road Management Objectives

Site Specific Design Criteria

Road No. 2180700

Road Location: Road located to accommodate logging systems and still have least impact on the other resources. Location stays below of any steep (>67%) ground, no unstable soils encountered. One section of steep ground at MP 0.60 may require +/- 500 feet of full bench construction.

Wetlands: Road location was completed to avoid wetlands although wetlands were unavoidable on the beginning portions of the location due to practicality, safety, engineering design constraints and considerations for other resources..

Erosion Control:

Rock Pits: As shown on map, no major concerns.

Resource Information (If applicable):

Timber/Logging: There is a medium to high probability of salvage timber.

Soils/Water: The proposed route traverses forested wetland and uplands on sideslopes of 30 to 60 percent gradient. The cedar-hemlock-blueberry-skunk cabbage forested wetland serves to transfer water to downslope resources. Use BMPs 12.5, 14.12, and 14.19 to prevent disposal of excavated materials in wetlands. Helicopter yarding is considered in alternative 2 of this EIS. About 500 feet of the 700 road may require full bench and end-haul construction. Consult with a Soil Scientist during the plan-in-hand review (BMPs 14.7 and 14.12). The 700 road is to be closed to vehicular traffic following timber harvest (BMP 14.22). Apply 33 CFR BMPs 2, 4, 5, 8, and 14. The 700 road meets the requirements for the silvicultural road exemption from the 404 permitting process.

Silviculture: Road no. 2180700 provides access to unit 616-022 and portions of 616-023. Unit 616-022 has potential for 62 acres PCT in 25+ years. Unit 616-023 has potential for up to 20 acres PCT in 25+ years.

Wildlife/Botany: No concerns.

Lands/Minerals/Geology/Karst:

Visual/Recreation: Avoid sidecasting of overburden and excavated rock on downhill slope particularly where road passes through unit.

Cultural:

Road Management Objectives

Stream Crossings

Road No. 2180700

A.) MP 0.30 AHMU Class IV Channel Type: HC5 BF Width: 1m BF Depth: 15cm Substrate: bdrk
Gradient 30 % Structure: 600mm cmp Passage Req'd.: No Timing Dates: none
Narrative:

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